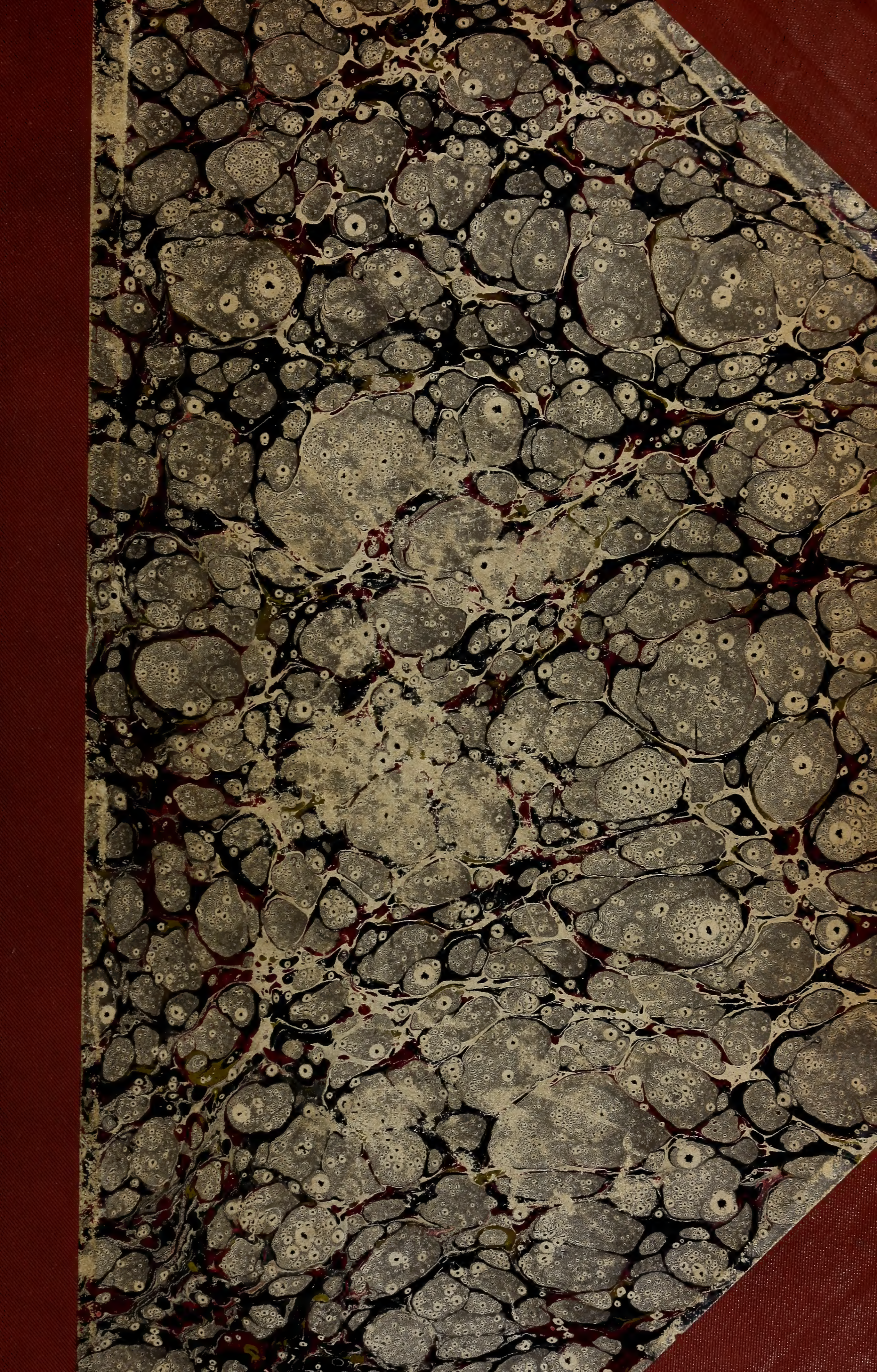

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VOL. IX JANUARY, 1910 No. 1

The Coagulation of Blood.

By W. H. HOWELL, M. D., Prof. of Physiology, Johns Hopkins University, Baltimore.

The cause of the coagulation of the blood has been the subject of continued investigation for many years. As a conquence our knowledge of the properties of the blood has been greatly increased, but unfortunately we are still far from understanding all that takes place in the act of clotting. Investigation has served to show that the process is a complex one, involving the physical and chemical interaction of substances whose structure and condition in the blood are incompletely known, and concerning which it is necessary at present to construct hypotheses. In the nature of the case workers in this field have been forced to formulate theories to express in some intelligible way the results of their experiments, and the great number of these theories with which the student of the subject must deal is in itself a witness to the difficulties of the problem. One may criticize these theories, one may even feel a considerable degree of dissatisfaction with the obviously speculative character of many of them, but it seems evident that in the absence of a better knowledge of the chemistry and physical chemistry of the blood progress can not be made by any better method than by experimenting and theorizing

The subject is of interest and importance in physiology and medicine not simply for the understanding of the act of clotting itself, but for the reason that it has furnished and will continue to furnish most valuable information regarding

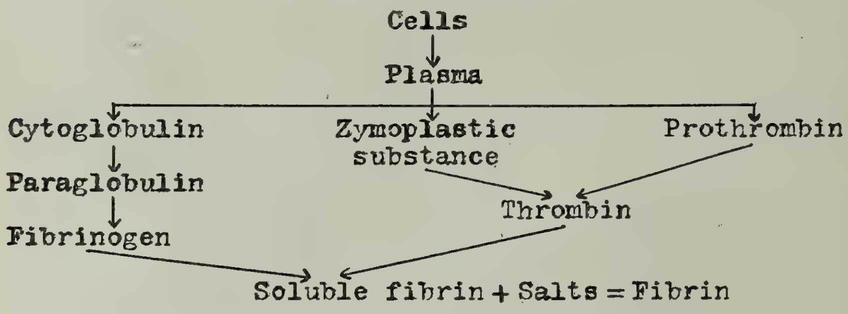
---

Read before the Experimental Section of the Academy of Medicine of Cleveland, November 12, 1909.

the structure and properties of that very complex tissue, the blood. A better understanding of the nature and properties and conditions of equilibrium of the organic and inorganic constituents of this liquid must be obtained in order to comprehend better its relations to the nutrition of the tissues. Those who are studying the phenomenon of clotting are doing their part in contributing to the improvement of knowledge in this direction.

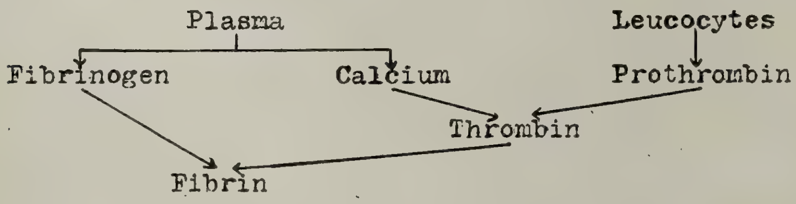
Some idea of the divergence of the theories of coagulation may be obtained by an examination of the accompanying schemata, representing views that are under discussion at the present time. Simple schemata of this kind can not express fully the theories of the authors to whom they refer, but they serve at least to emphasize characteristic differences in points of view.

THEORY OF SCHMIDT.



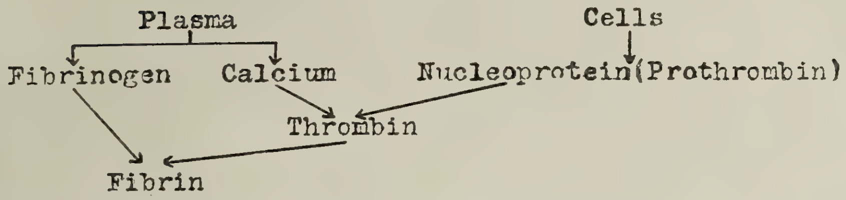
According to this theory fibrinogen, zymoplastic substances and prothrombin exist in the circulating plasma. By the action of the zymoplastic substances on prothrombin the latter is changed to thrombin. Thrombin and fibrinogen interact to form fibrin, but the actual precipitation of this substance in an insoluble form is due to a combination or reaction with the neutral salts of the blood.

THEORY OF ARTHUS.



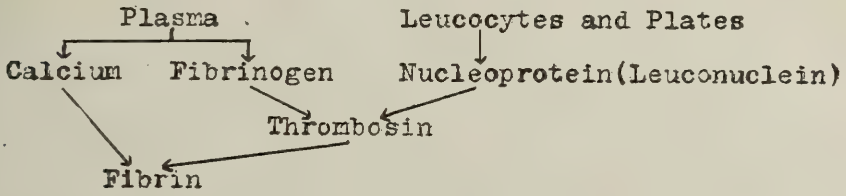
The plasma contains fibrinogen and calcium, the cells (leucocytes and plates) furnish the prothrombin. By reaction with calcium the prothrombin is converted to thrombin and this in turn converts fibrinogen to fibrin.

Theory of Pekelharing.



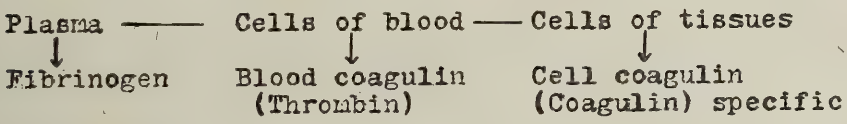
Like the theory of Arthus, except that the prothrombin is assumed to be a nucleoprotein which when united with calcium becomes the active thrombin.

Theory of Lilienfeld.



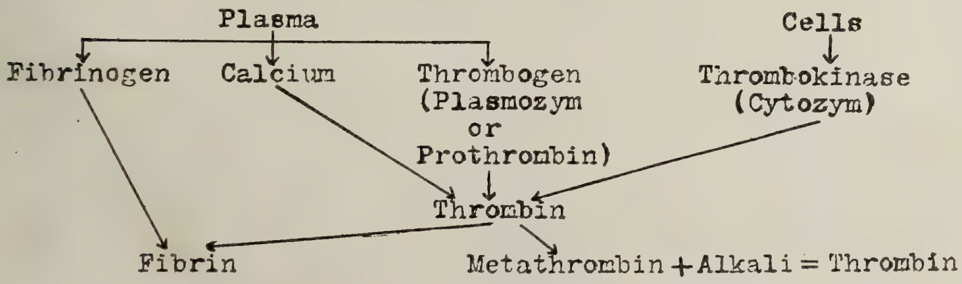
The plasma contains fibrinogen and calcium, the leucocytes and plates furnish a special nucleoprotein which by action on fibrinogen produces a substance, thrombosin. The thrombosin by reaction with calcium gives fibrin.

Theory of Loeb.



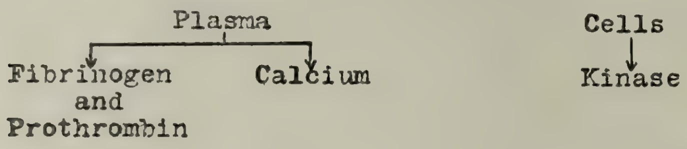
Fibrinogen may be converted to fibrin by the action of a coagulin produced from the blood-cells (thrombin), or it may be acted upon in a similar way by a coagulin arising in the tissues generally. This latter coagulin differs from that of blood in being more or less specific to the animal and in requiring the presence of calcium to react with fibrinogen.

Theory of Morawitz and Fuld.


Plasma
Cells
Fibrinogen
Calcium
Thrombogen (Plasmozym or Prothrombin)
Thrombokinase (Cytozym)
Thrombin
Fibrin
Metathrombin + Alkali = Thrombin

The plasma contains fibrinogen, calcium and a prothrombin (thrombogen). The cells (leucocytes and plates) furnish a kinase which by reaction with calcium and thrombogen forms thrombin. The thrombin and fibrinogen react to produce fibrin.

THEORY OF MELLANBY.

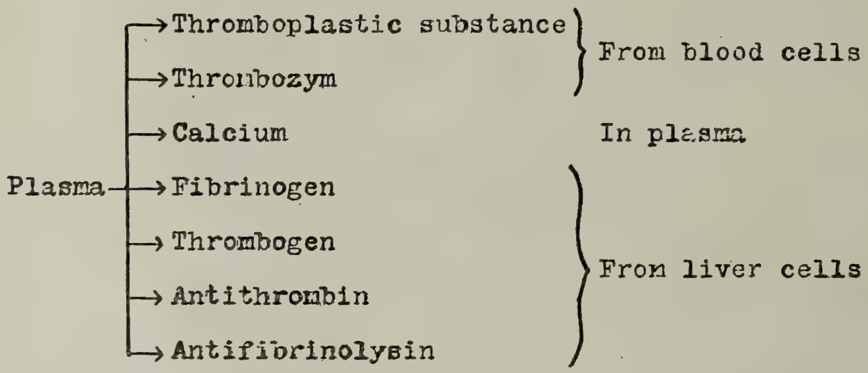


Prothrombin + Calcium + Kinase = Thrombin
or
Prothrombin + Calcium + Alkali = Thrombin
or
Prothrombin + Calcium(?) = Thrombin

Thrombin + Fibrinogen = Fibrin

The theory is similar to that of Morawitz except that it assumes a constant association of fibrinogen and prothrombin, and in the conversion of prothrombin to thrombin admits that kinase may be replaced by alkali or that possibly calcium may effect this change.

THEORY OF NOLF.



Fibrinogen + Thrombozym + Thrombogen = Fibrin or Thrombin

The essential factors of coagulation are three colloids (proteins) existing in the blood—fibrinogen and thrombogen furnished by the liver, and thrombozym furnished by the leucocytes. By an act of mutual precipitation these colloids unite to form fibrin or thrombin, the latter containing less fibrinogen than the fibrin. In order for this reaction to take place calcium must be present as also certain substances (thromboplastic) which constitute centers of precipitation. In addition an antithrombin constantly present in the plasma and furnished by the liver plays a part in controlling the production of fibrin, and an antifibrinolysin, also derived from the liver, is responsible for the usual permanency of the clot by preventing its self-digestion.

All of these eight schemata, with the exception of that furnished by Nolf, agree at least in stating that fibrin is formed by the action of thrombin upon fibrinogen. Nolf, like Wooldridge, maintains that thrombin is not a factor in the causation of coagulation but is one of the products of this process. Thrombin is not formed before clotting, but during the clotting. He admits that once thrombin is formed it has the property of converting fibrinogen to fibrin. In his theory the three protein bodies present in the plasma, namely, thrombozym, thrombogen and fibrinogen, unite, and two products result, the insoluble fibrin which constitutes the clot and a soluble fibrin which is thrombin. The latter differs from fibrin in containing less fibrinogen; it is in fact an unsaturated compound which is capable of taking up more fibrinogen and thus forming fibrin. In considering the theories of coagulation it is necessary to take account of this peculiar point of view, since it is evident that if this theory is correct all of our usual conceptions of the process of clotting start from a fundamentally erroneous hypothesis. The question, as Nolf puts it, seems to be a matter of logic rather than of experiment and the conclusion he comes to depends entirely upon the validity of his premises. He quotes Wooldridge as saying that a plasma free from cells and from thrombin when made to clot yields a serum containing thrombin, therefore the thrombin like the fibrin did not preexist in the plasma but was formed during the act of clotting. The argument seems to be far from conclusive. For it is quite evident that thrombin may have existed in some antecedent form, a prothrombin, and that the first step in the clotting—in accordance with the usual view—was the activation of this prothrombin to thrombin. Either of these views is certainly permissible. Schmidt long ago showed that the normal blood contains no thrombin, and this statement is admitted substantially by all observers. But in order to prove this fact it is necessary to catch the blood from the arteries directly into alcohol and thus put a stop to those alterations which occur in shed blood. Any delay in submitting the normal blood to the action of alcohol is followed by the development of some thrombin, and this fact suggests strongly that the thrombin is formed before coagulation sets in. If the experiment of Wooldridge is to be considered as supporting the view advocated by Nolf, one would ask for a demonstration that thrombin is absent up to the moment of coagulation.

A second argument advanced by Nolf in support of his view is found in a statement that the coagulation of fibrinogen by thrombin is a process different from that occurring in the coagulation of blood. The differences, as I understand him, are these: First, salts of calcium are necesary for normal coagulation but not for the action of thrombin on fibrinogen. Second, solutions of neutral salts (5% sodium chlorid) make blood incoagulable, but do not prevent the clotting action of thrombin when added to the same blood. Third, thromboplastic substances are necessary in normal clotting but are not required in the action of thrombin on fibrinogen. It is not possible to give much weight to any of these facts as constituting a proof for the view advocated by Nolf, for the reason that they all compare blood before the thrombin is formed in it with a solution of fibrinogen to which ready formed thrombin is added. Calcium, for example, according to the current theory, is necessary in the production of thrombin from prothrombin, but once the thrombin is formed calcium is not required for the clotting of blood any more than it is for the clotting of a solution of fibrinogen. The arguments are valid in fact only if one accepts in the beginning the point which Nolf wishes to prove. Those who have had much personal experience with the clotting of solutions of fibrinogen by thrombin will be slow to admit that it is in any essential respect different from the clotting of a cell-free plasma. In one as in the other the fibrinogen disappears and a firm gelatinous coagulum is formed with intermediate physical stages which are similar in both cases. If a pure solution of fibrinogen is used and a submaximal amount of thrombin is added there may be no thrombin left in the serum squeezed from the clot, but if thrombin is present in excess of that needed to convert the fibrinogen to fibrin, as is the case with blood-plasma, then thrombin will be found in the serum. In spite of the extensive and important investigations made by Nolf, and in spite of his emphatically expressed belief that everyone else is wrong in this matter, we must conclude, I believe, that he has failed so far to give convincing support to his view that thrombin is not a factor in the normal clotting of blood. We must still accept as our fundamental starting point the fact that the coagulation of blood is due to the action of thrombin upon fibrinogen. The problems yet to be solved satisfactorily are now what they have been for many years, namely the nature and origin of the thrombin and the nature of its reaction with or its influence upon the fibrinogen. In this connection I should like to call attention to experimental results recently obtained by Dr Rettger* in my laboratory which throw some light upon the nature of thrombin.

Is thrombin a ferment? Since the time of Schmidt thrombin has been considered by almost all workers in this field as a ferment or enzyme. Schmidt gave ten reasons for this view, the two most important being that in the first place it is a thermolabile substance being destroyed by a temperature of 56° to 60° C. or over, and in the second place that it is not destroyed by the reaction which it induces, that is to say, in modern nomenclature it acts as a catalytic agent and does not unite in quantitative proportions with its substrate, fibrinogen. Rettger's experiments seem to prove that neither of these statements is correct. Schmidt himself admits that sometimes the coagulating action of solutions of thrombin is not entirely destroyed by boiling and I had occasion to call attention to the same fact many years ago, but Rettger has shown that if solutions of thrombin are obtained free from admixture with noticeable amounts of coagulable protein they will resist a boiling temperature even if maintained for some minutes. The solutions of thrombin used in these experiments were obtained by Schmidt's method. That is to say, the serum from coagulated dog's blood was precipitated by a large excess of alcohol. The precipitate after standing for some time in contact with the alcohol was dried and extracted with water. If this extraction is made rapidly, an aqueous solution of thrombin is obtained which gives no precipitation on boiling and yet has a quick and powerful effect in coagulating solutions of pure fibrinogen. When such solutions are boiled they still exhibit the property of converting fibrinogen to fibrin, so that we can not believe that thrombin belongs to the group of thermolabile substances, and arguments for its ferment nature based upon this property fall to the ground.

Schmidt's second point that the thrombin is not used up in the reaction which it produces and that therefore it acts catalytically is likewise capable of refutation. It may be observed in passing that the experimental evidence furnished by Schmidt for his view is far from satisfactory. He made use of what he calls a "salt-plasma solution." To 10 c.c. of this solution he added 80 c.c. of a thrombin solution and the mixture clotted within two minutes. The clot was broken up with a platinum wire and the serum thus obtained was added to a new quantity of salt-plasma solution. This process was repeated seven successive times and

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[The Coagulation of the Blood, by L. J. Rettger: Amer. Jour. of Physiology, 1909, vol. 24, p. 406.

in each case a coagulation was obtained, but it is to be noted that each successive coagulation was weaker and slower than the preceding one. While the first coagulation occurred in two minutes, the seventh required four hours (Zur Blutlehre, 1892, p. 24). This result is not all we should expect if the thrombin acts catalytically, and it is open to the obvious criticism that the experiment began with an excessive amount of thrombin, much more than was necessary to coagulate the fibrinogen. The successive clottings obtained were due in all probability not to the fact that the same thrombin acted over and over again, but rather to the fact that an excess of thrombin remained unused after each coagulation, this excess being diminished at each coagulation until it finally disappeared. Mosso long ago objected to the ferment nature of thrombin upon the ground that to obtain its action upon fibrinogen it must be present in large quantities as compared with other enzymes, and in performing experiments of successive clottings similar to that described by Schmidt he reports that after the second clot no further results could be obtained. So also a recent observer, Mellanby, has reported results which carry the same interpretation, for he states that the serum obtained by allowing thrombin to act upon fibrinogen contains no thrombin. Rettger has, however, given, I believe, conclusive proof that the action of thrombin upon fibrinogen is not a catalytic process but a union or reaction in quantitative proportions. In these and indeed in all experiments upon the coagulating action of thrombin it is necessary to start with a pure solution of fibrinogen which is not itself spontaneously coagulable and which can not be made to clot with anything beside thrombin. The solutions of fibrinogen used in these experiments were prepared in accordance with the method first used by Hammarsten, that is by salting out the fibrinogen with sodium chlorid. Two important alterations were made in the method which are helpful or essential in obtaining solutions of fibrinogen free from admixtures with thrombin or its antecedent stages. The first of these alterations consists in separating and washing the precipitate of fibrinogen always by centrifugalization and decantation instead of by filtration. By this means the fibrinogen is prevented from passing over into an insoluble modification. The second improvement consists in "wiping out" the final solution of fibrinogen by producing in it a slight precipitate of barium phosphate which carries down with it all traces of thrombin and prothrombin together with some of the fibrinogen. Solutions of fibrinogen made by this method do not clot spontaneously, nor upon the addition of calcium chlorid or of tissue extracts, but they do clot promptly upon the addition of solutions of thrombin prepared by Schmidt's method. To such fibrinogen solutions one may add a small or a large amount of thrombin extract, and it is not difficult to show that certain small amounts of thrombin may be used which give an incomplete conversion of the fibrinogen to fibrin. If one keeps below the amount of thrombin requisite to convert all of the fibrinogen it may be shown that the weight of fibrin formed varies directly with the amount of thrombin added. The difference in the clot is readily perceived by the eye, but to place the fact beyond doubt a quantitative determination of the fibrin was made. In this experiment 500 c.c. of clear plasma obtained by centrifugalizing cat's blood were used. From this plasma 500 c.c. of pure fibrinogen were prepared. This was divided into four equal parts and to these parts were added respectively 5, 10, 20 and 40 drops of a thrombin solution. These mixtures were allowed to stand 24 hrs. at room temperature. The fibrin in each was then collected on a weighed filter and after washing with water, alcohol and ether was dried at 110° C. to constant weight. The results were as follows:

5	drops	of	thrombin	gave	0.2046	gm.	fibrin.
10	"	"	"	"	0.3573	"	"
20	"	"	"	"	0.6089	"	"
40	"	"	"	"	1.5872	"	"

This experiment indicates that the amount of fibrinogen converted to fibrin varies directly with the amount of thrombin used. Such a result is inconsistent with the view that the thrombin acts catalytically, and suggests on the contrary that in the formation of the fibrin the thrombin combines quantitatively with the fibrinogen. The two chief arguments advanced by Schmidt in proof of the ferment nature of thrombin seem therefore to be refuted, and we are led to the contrary conclusion that thrombin is not a ferment, but a substance which combines permanently with the fibrinogen. So far as I am aware the only important evidence that has been offered since the time of Schmidt in favor of the view that thrombin is a ferment and acts catalytically is to be found in a series of careful experiments reported by Fuld in which he attempted to determine the effect of the amount of coagulating agent upon the time of clotting. At room temperature doubling the amount of enzyme solution increased the rapidity of clotting by one and a half, and in general the relationship observed corresponded approximately to what is known as Schütz's law, according to which the ferment action varies as the square root of the concentration of the ferment. These results, however, do not seem to be applicable to thrombin, since Fuld used for his ferment solutions extracts of muscle which were added to non-coagulating bird's plasma. Extracts of muscle may, in the nomenclature of the day, contain a kinase or zymoplastic substance, but no one is justified on experimental grounds in claiming that they contain thrombin. From time to time objection has been made to the view that coagulation of the blood is a fermentative process, but for the most part this theory has been accepted by all modern workers in this field with the exception of Nolf. According to this observer the actual formation of fibrin by the union of thrombozym, thrombogen and fibrinogen is not a process of fermentation, but an example of the mutual precipitation of colloids. He holds, nevertheless, that thrombin when formed is a ferment, by virtue of its thrombozym constituent. It is not, however, a coagulating ferment, but rather a proteolytic ferment capable of digesting the fibrin by hydrolytic cleavage.

Metathrombin. One of the most interesting properties of thrombin is the fact that in the fibrinogen-free blood, that is, in blood serum, it becomes inactivated with some rapidity. Fresh serum will cause fibrinogen solutions to clot, but this coagulating influence grows weaker as the serum stands and may finally disappear, the inactivation being more rapid with some bloods than with others. This inactive form of thrombin was designated by Morawitz as beta-proferment or beta-prothrombin and by Fuld as metathrombin, a name which has been generally adopted in recent literature. Fuld explained the metathrombin simply as a more stable form of thrombin produced in some unknown way, and he and Morawitz showed that it can be converted readily to active thrombin by treatment with dilute alkali and subsequent neutralization. Old serum treated in this way regains to the full its normal coagulating effect upon solutions of fibrinogen. Later observers have interpreted the process of inactivation in various ways. Nolf supposes that the thrombin undergoes a process of condensation by a union with itself similar to the act of polymerization. Mellanby believes that the thrombin is slowly combined with an antithrombin present in the serum. Rettger in his experiments upon this point has added several new observations of great interest. He has shown in the first place that old serum which has lost its coagulating influence may be activated not only by the addition of acid or alkali, but also by submitting it to putrefaction. The serum once it has begun to putrefy shows a thrombin action which persists for weeks or months. He finds, moreover, in opposition to the statement of most observers that serum whose coagulating influence has been destroyed apparently by heating to 56° to 65° C. may again be activated by treatment with alkali and subsequent neutralization. Thus again he demonstrates that thrombin is not so thermolabile as has been usually taught. His explanation of the inactivation of the thrombin is that it combines with some of the protein in the serum and that this combination occurs slowly at low temperature, rapidly at higher temperatures. It is this combination which is broken up by the action of alkalies or acids or by the process of putrefaction. Whether or not this view is correct will be determined by further experiments, but the fact that the supposed destruction of thrombin in serum by a temperature of 56° or higher is simply a case of accelerated inactivation is important in refuting this supposed evidence for the ferment nature of thrombin.

(To be continued in the next issue)

Tests of Insanity in the Criminal Court.

By WILLIAM A. CAREY, LL. B., Cleveland.

Courts of criminal jurisdiction must view insane mental action from an ethical or civil aspect; in other words, the question before the court is one of responsibility or accountability. Is or is not the accused responsible or accountable to society for the commission of the act with which he stands charged?

If not at all times, at least since the institution of our system of trial by jury, I dare say the most perplexing problems that have confronted the judges, are those which are presented when the defense of insanity is interposed in a criminal case.

This defense leads to an investigation of that attribute of humanity which can neither be seen, heard, felt, tasted, nor touched,—the mind,—and so human judges, with human instincts, feelings and emotions are confronted with the task of laying down rules whereby the operation or lack of operation of the mind of the accused may be determined with as great a

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Read before the Medicolegal Section of the Academy of Medicine of Cleveland, October 29, 1909.

degree of accuracy as the circumstances of the case will permit, and while performing this task, the judge must never lose sight of the rights of the accused, nor must he be remiss in his obligations to society or the State; so that, as I have heretofore stated, the question is one of responsibility or accountability of the accused to society.

The simplest, most general and most popular definition of insanity is that it is a disease of the mind. Insanity etymologically signifies unsoundness; lexically it signifies unsoundness of the mind, or derangement of the intellect. It is a chronic disease of the brain, inducing chronic disordered mental symptoms. It is the state of being unsound in mind, derangement of intellect, madness. The word is applicable to any degree of mental derangement, from slight delirium or wandering to distractions. Whether mental unsoundness be congenital, or a result of arrested mental development, of religious excitement, of physical disease, of old age, or of unknown causes; whether it be casual, temporary, or permanent; whether it be personal or hereditary; whether it be manifest in the mildest dementia, or the wildest mania, it is expressed by the term "insanity."

Exemption from accountability or responsibility for criminal acts is a question of fact to be determined by the jury, and like all other facts, must be determined from the evidence in the case; and therefore, after the evidence has been presented, the judge instructs the jury and presents to the jurors the rule of law applicable to the facts in the case on trial.

These rules of law which may properly be said to constitute the test of responsibility, are not wholly of modern creation, but are, I might say, the outgrowth of the experience of ages, having been amended and revised to meet the constant changes in social conditions, and the demands of ever advancing civilization, and the purpose of the courts is to keep them in consonance with new and authoritative discoveries in the science of medicine.

There was a time when lunatics were regarded as persons of demoniacal possession, or self-made victims of evil passions, rather than as sufferers of disease, and as such they were often subjected to the most cruel punishments. This condition was not due to the unyielding demands of the law or its administrators alone, but was in a large measure produced by the ignorance of the medical profession. Extensive research with reference to insanity, led to many new discoveries in the science of medicine, and the courts taking cognizance of these discoveries, have constantly caused alterations to be made in the rules of law governing cases in which insanity was pleaded as a defense, with a view of having exact justice done between the State and the offender against its laws.

Lord Coke stated that the test of insanity was the total absence of memory and understanding.

Lord Hale, one of England's greatest jurists, said "A man may be *non compos mentis quoad hoc,* without being *non compos mentis* altogether," thus recognizing the proposition that there may be a partial insanity.

In the year 1800 Mr. Erskine, afterwards Lord Erskine, Chancellor of England, in his defense of James Hadfield, an insane soldier who fired a pistol at the King, said, "Delusion, where there is no frenzy or raving madness, is the true character of insanity." But he also said that as a doctrine of law, the delusion and the act should be connected. Erskine's contentions were upheld in this case, and it was probably the first case in which any determinate test or specific symptom by which an insane reason could be distinguished from sane or mental reason was laid down. The rule laid down by Erskine for discerning insane mental action was followed by the courts for many years, and to some extent is followed today.

Shortly after the decision in Hadfield's case, in Billingham's case decided in 1812 by Lord Mansfield, the test was held to consist in a knowledge that murder (the crime then committed) was "against the laws of God and nature," thus meaning an ability to distinguish between right and wrong in the abstract.

In the year 1843 the leading English case on this subject was decided. It is known as McNaghten's case, and is reported in 10 Clark & Finnelly's report at page 200. McNaghten was charged with shooting one Edmund Drummond, thereby killing him. Lord Chief Justice Tindal, in his charge to the jury, in part said, "The question to be determined is, whether, at the time the act in question was committed, the prisoner had or had not the use of his understanding, so as to know that he was doing a wrong or a wicked act. If the jurors should be of the opinion that the prisoner was not sensible at the time he committed it, that he was violating the laws of both God and man, then he would be entitled to verdict in his favor; but if, on the contrary, they were of the opinion that when he committed the act, he was in a sound state of mind, their verdict must be against him." There was a verdict of "not guilty" on the ground of insanity.

This verdict, and the question of the nature and extent of the unsoundness of mind, which would excuse the commission of a felony of this sort, having been made the subject of debate in the House of Lords, because of its unpopularity among the people in general, it was determined to take the opinion of the judges on the law governing such cases, and therefore, the House of Lords propounded certain questions to the judges. The qualifications of the answers of the judges clearly showed that the judges realized cases might arise wherein their abstract answers to the abstract questions could not, without modifications, be properly applied. The questions and answers as laid down in Clark & Finnelly's reports, *supra* are as follows:

"What is the law respecting alleged crimes committed by persons afflicted with insane delusions in respect to one or more particular subjects or persons, as, for instance, where at the time of the commission of the alleged crime the accused knew he was acting contrary to law, but did the act complained of with a view, under the influence of insane delusion, of redressing or revenging some supposed grievance or injury, or of producing some supposed public benefit?"

In answer to which question the judges replied, "Assuming that your Lordships' inquiries are confined to those persons who labour under partial delusions only, and are not in other respects insane, we are of the opinion, that notwithstanding the party accused did the act complained of with a view, under the influence of insane delusion, of redressing or revenging some supposed grievance or injury, or of producing some public benefit, he is nevertheless punishable according to the nature of the crime committed, if he knew at the time of committing such crime that he was acting contrary to law; by which expression we understand your Lordships to mean the law of the land."

Second question: "What are the proper questions to be submitted to the jury, where a person alleged to be afflicted with insane delusion respecting one or more particular subjects or persons, is charged with the commission of a crime (murder, for example) and insanity is set up as a defense?" And thirdly, "In what terms ought the question to be left to the jury as to the prisoner's state of mind at the time when the act was committed?"

As these questions appeared to the judges to be more conveniently answered together, they submitted their opinion to be: "That the jurors ought to be told in all cases that every man is presumed to be sane and to possess a sufficient degree of reason to be responsible for his crimes, until the contrary be proved to their satisfaction; and that to establish a defense on the ground of insanity, it must be clearly proved at the time of the committing of the act, the party accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing; or if he did know it, that he did not know he was doing what was wrong. The mode of putting the latter part of the question to the jury on these occasions has generally been, whether the accused at the time of doing the act knew the difference between right and wrong; which mode, though rarely if ever, leading to any mistake with the jury, is not as we conceive, so accurate when put generally and in the abstract, as when put with the party's knowledge of right and wrong in respect to the very act with which he is charged."

The fourth question was, "If a person under an insane delusion as to existing facts, commits an offence in consequence thereof, is he thereby excused?"

To which the judges replied that "The answer must, of course, depend on the nature of the delusion; but, making the same assumption as we did before, namely, that he labours under such partial delusion only, and is not in other respects insane, we think he must be considered in the same situation as to responsibility as if the facts with respect to which the delusions exist were real. For example, if under the influence of his delusion, he supposes another man to be in the act of attempting to take away his life, and he kills that man, as he supposes, in self defense, he would be exempt from punishment. If his delusion was that the deceased had inflicted a serious injury to his character and fortune, and he killed him in revenge for such supposed injury, he would be liable to punishment."

Up to the time of McNaghten's case, there were no set rules governing the judges in their instructions to jurors in the cases under consideration in this paper, and while it is true the instructions purported to follow precedents laid down in previous adjudications, in many instances these precedents were entirely lost sight of.

There was much doubt as to the legality of the questions and answers in the McNaghten case, but it might be said that they have to a great extent, served as the guiding star in Anglo-American jurisprudence since the year 1843. They have in many instances been severely criticized by high authorities in England, and while they have been followed by many American courts, they have also been subjected to much and severe criticism by learned judges in this country, both in the federal and State courts.

The McNaghten case seems to have taken cognizance of the right and wrong test, both in the abstract and as applied to the particular act in question. It also recognizes the test of delusion, but it wholly disregarded the test of irresistible impulse.

Judge Somerville in his opinion in the case of Parsons vs the State, stated, that the rules laid down by the judges in the McNaghten case ignored the possibility of crime being committed under the duress of an insane delusion operating upon human mind, the integrity of which is destroyed or impaired by disease, except perhaps in cases where the imaginary state of facts, if real, would excuse or justify the act done under their influence. And it is an anomaly that the test of irresistible impulse was not given more recognition in the answer of the judges when, three years prior to the making of these answers, Lord Denman in the case of Rex vs Oxford, 2 Carrington and Payne, 222, charged the jury, that "If some controlling disease was in truth the acting power within the defendant, which power he could not resist, then the defendant will not be responsible."

The rules laid down in the McNaghten case have not always been followed by English courts, but the judges have been prone to scrutinize the facts of each separate case, with the result that many exceptions to the rules in the McNaghten case have been recognized by the English judges. But I think it might safely be said that the courts of England, still to a large extent give recognition to the McNaghten rules.

I have perhaps given more time and space to a dissertation upon the test of insanity in the English criminal courts than is necessary for the purposes of this paper, but I deemed it proper, in view of the widely recognized fact that the laws of this country and procedure in our courts are based largely upon the common law of England, and the procedure of the courts in that country and the tests of criminal responsibility in the English criminal courts have, to a greater or less extent, with certain modifications it is true, been followed by the courts in these United States.

The right and wrong test seems to have been adopted in practically all of the States of the Union. In none of the States have we found judicial expression even hinting towards the unreasonable proposition, that a man should be held accountable for his acts when he had not the ability to distinguish between right and wrong as to matters in general. In nearly all of the States we find decisions wherein the courts have stated that the inability to distinguish between right and wrong need not be general, but that it is only necessary that it relate to the particular act with which the accused stands charged. The courts hold that a person may be sane on every subject but one, and yet if that subject is the very act with which he stands charged, and with respect to it he is unable to distinguish between right and wrong, then he would not be held accountable.

In New York in 1873 the court of appeals stated "that the test of responsibility for criminal acts, where unsoundness of mind is interposed as a defense, is the capacity of the defendant to distinguish between right and wrong at the time of, and with respect to the act, which is the subject of the inquiry." The same rule was laid down in the federal courts in 1885, and is still followed in both of these jurisdictions.

In a case in Texas decided in 1892 the court said, "The law will not consider insanity in a criminal case unless it deprives a person of the capacity and power to distinguish between right and wrong as to the particular act charged as an offence; if a person has knowledge and consciousness that the act he is doing is wrong and will deserve punishment, whatever be his mental or physical weakness, he is, in the eye of the law, of sound mind and memory and consequently the subject of punishment, but if a person is incapable of having a knowledge and consciousness that the act he is doing is wrong and criminal, and will subject him to punishment, he is insane and not responsible for crime committed by him."

This court seems not to regard that form of insanity termed "irresistible impulse," to which I will refer later.

Medical writers have not hesitated to freely criticise, and in many instances condemn the right and wrong test of responsibility, but its practical usefulness in the administration of substantial justice, has been proved by the experience of the courts. Many of the courts have gone beyond this rule, believing it was not broad enough to cover the facts presented in cases coming before them, but I know of none, excepting the courts of New Hampshire which criticises the use of the rule by the judges in their instructions, and even the courts of New Hampshire do not affirm that the right and wrong test of responsibility is not a safe one for the jurors to follow. So that we may say that the inability to distinguish right from wrong, as a test of criminal responsibility, has become, and up to the present time is a criterion, though not the only one used by our courts in these cases.

Those trials wherein delusion of the defendant was pleaded as a ground for exemption from responsibility, or where it was pleaded that the defendant was overpowered by so-called "irresistible impulse," or where the accused was said to be a subject of moral insanity, have been the source of considerable perplexity to the judges. It has been almost universally held that the delusion must be a mental one, as distinguished from a moral one, and that the delusion must be directly connected with the offense charged, and it must be such a delusion, as if true, would excuse the crime committed.

The way the courts have generally expressed the rule in regard to delusion has been that "The delusion must be such as would excuse the act, if the facts about which it exists were true." This test has been generally recognized and is essential where the defense is simply that of insane delusion. The courts that limit themselves to the right and wrong test of irresponsibility, refuse to recognize irresistible impulse as a test for criminal accountability, where the accused has a knowledge of right and wrong as to the particular act. New York, New Jersey, Maryland, Minnesota and several other States have assumed this attitude, but the courts in other States recognize irresistible impulse as a test of responsibility where the irresistible impulse is the outcome of a diseased mind.

In *Words and Phrases Judicially Defined,* it is said, "The former class maintains that if the impulse was irresistible, the person accused is entitled to be acquitted because the act was not voluntary, and was not properly his act. If the impulse was resistible, the fact that it proceeded from disease is no excuse at all. There can be no coexistence of an impulse absolutely irresistible with the capacity to distinguish between right and wrong with reference to the act. The latter class maintains that resistible impulse implies knowledge of right and wrong in some degree, but coupled with it the absence of power resulting from a disordered mind to successfully resist the impulse to do the criminal act."

This irresistible impulse however, must not be confused with mere mental depravity, or moral insanity so called. Moral insanity is now seldom used as a defense.

Now, as we have taken into consideration the most common test of responsibility laid down by the courts, it would not be improper to call attention to some cases that in the legal profession are considered enigmatical, to say the least. These are the decisions laid down by the courts of New Hampshire. In that State the court instructed the jury that, "If they found the defendant killed his wife in a manner that would be criminal and unlawful if the defendant were sane, the verdict should be 'not guilty' by reason of insanity, if the killing was the offspring or product of mental disease in the defendant; neither delusion, nor knowledge of right or wrong, nor design or cunning in planning and executing the killing, and escaping or avoiding detection, nor inability to recognize acquaintances, or to labor, or to transact business, or manage affairs, is, as a matter of law, a test of mental disease; but all symptoms and all tests of mental disease are purely matters of fact to be determined by the jury; whether the defendant had a mental disease or whether the killing of his wife was the product of such disease are questions of fact for the jury."

The fallacy of such a charge can be appreciated even by a layman. The multitudes of cases on both sides of an invisible line, where under the most favorable conditions, it is almost impossible to say with confidence that the mind is or is not sane, under such a charge, must be passed upon by twelve ordinary men, without the least scientific assistance from the court. These twelve men have not a single rule to go by, or perhaps they have as many rules as there are men. The evidence, method of determination,—everything, is thrust upon them in a conglomerated mass to be picked apart in the best manner their own incomplete, unscientific and feeble efforts can, in a brief time, create. Shall we place the fate of possibly an innocent individual in the hands of twelve laymen who must arrive at a determination in but a general way, or more likely by merely intuitively following their feelings? Common justice forbids! Generality and mere intuition are too incomprehensive and uncertain for such an important decision. When the question of criminal responsibility is presented, there is an imperative necessity of deciding by rule, and by rule, the product not of a few hours of deliberation by twelve ordinary men, but of years of scientific deliberation and research by men who have made insane mental action and criminal responsibility a special study.

An ordinary rule, if none other can be discovered, must be drawn, and it must be certain, comprehensive and broad; certain enough to be a basis for the conduct of life; comprehensive enough to admit of its being explained to a jury without the danger of misleading them; broad enough to cover many cases without confusing unskilled minds by minute distinctions.

That this conclusion is justified, I submit, is proved by a consideration of the well known facts that not only the legal but the medical profession, and the profoundest students of psychology have been for years, and still are, wandering through a labyrinth of doubt and uncertainty, seeking for some general test by which the criminal responsibility of a person with insane mental action may be determined by such a process as that the laws of natural justice will not be violated, and at the same time civilized society will be so protected as that its integrity shall not be jeopardized.

Passing from a consideration of this New Hampshire case which seems to favor the obliteration of all tests propounded by the courts, it is well to consider the rule laid down as the law in Alabama. After a thorough consideration, and discussion of all the different tests theretofore adopted by the courts, and with severe criticism of the New Hampshire doctrine, Judge Somerville of the supreme court of Alabama in the year 1886 enunciated what I believe is one of the most complete tests that have yet been proposed. His test is this:

"1. Was the defendant at the time of the commission of the alleged crime, as a matter of fact, afflicted with a disease of the mind, so as to be idiotic or otherwise insane?

"2. If such be the case, did he know right from wrong, as applied to the particular act in question; if he did not have such knowledge, he was not legally responsible.

"3. If he did have such knowledge, he may nevertheless not be legally responsible, if the two following conditions concur:

"(a) If by reason of the duress of such mental disease he had so far lost the power of choosing between the right and wrong, and to avoid doing the act in question, as that his free agency was at the time destroyed.

"(b) And, if at the same time the alleged crime was so connected with such mental disease in the relation of cause and effect as to have been the product of it solely."

This test of Judge Somerville's is couched in such language as that it may be easily understood by the ordinary juror, and I believe can be applied to every form of insanity known to the medical profession, without fear of an unjust verdict being returned.

In the State of Ohio the supreme court has not used the same test as the courts of Alabama, although some of the lower courts have followed the tests laid down by Judge Somerville with satisfactory results.

The first case of importance in the State of Ohio was that of Clark vs the State, decided in 1843. The test used in that case was stated thus: *"Was the accused a free agent in forming the purpose to kill Cyrus Sells? Was he at the time the act was committed capable of judging whether that act was right or wrong? and did he know at the time that it was an offence against the laws of God and man?"*

Ten years later in the case of Nancy Farrar vs the State, the lower court charged the jury as follows: "Insanity exists in so many shapes and forms, it is almost impossible for science to comprehend it. Insanity in its general legal sense is the inability to distinguish between right and wrong, and as applied to this case particularly, this is a question for you to settle: 'Was Nancy Farrar, at the time this act was committed, capable of judging whether this act was right or wrong, and did she know at the time that it was an offence against the laws of God and man?' So far as the girl Nancy is concerned, *you will carefully examine the testimony, touching her knowledge of right and wrong,* and if you find that she was able to distinguish between them, then, no matter how low an order may be her intellect, or how depraved her character, she is guilty as charged, if you have no reasonable doubt as to her commission of the act. The power of self control (*free agency*) is said to be quite as essential to criminal accountability as the power to distinguish between right and wrong, and I have no doubt that every correct definition of sanity, either expressly or by necessary construction, must suppose freedom of will to avoid a wrong, no less than the power to distinguish between the wrong and the right. The question here to be considered therefore, is, does the definition of the court shut out the notion that accountability may be destroyed by the absence of what counsel call the power of self control or free agency? I think not. True, there arises upon the facts in this record a not irrational theory, that some strange irresistible wish to see the effect of poison—to produce death—may have had such power over the prisoner as other insane fancies, which so often make a man or woman little more than a piece of mechanism, neither more capable of self control, nor of asserting the true laws of its being against the foreign influence, but the language of the court does not forbid the jury to consider such a state of facts, if it were proved, and the jury would do so unless prohibited."

In the case of McConnehey vs the State of Ohio, decided in 1855, it was held that delirium tremens was insanity, which affected responsibility for crime in the same way as insanity produced from any other cause, though mere drunkenness constituted no exemption from criminal responsibility.

In 1857 in the case of Loeffner vs the State, the supreme court in its opinion says: "The accused in a criminal case is not entitled to an acquittal on the ground of insanity, if at the time of the alleged offence he had capacity and reason sufficient left to enable him to distinguish between right and wrong, and understand the nature of his act, and relation to the party injured."

In 1872 in the case of Blackburn vs the State of Ohio, the test was laid down as follows, *"Was the accused a free agent in forming the purpose to kill? Was he at the time capable of judging whether that act was right or wrong, and did he know at the time that it was an offence against the laws of God and man?"* The supreme court in this case said that a charge setting out the foregoing test was not error prejudicial to the accused. This test has been used in this State since the decision of this case.

In a case which arose in our own city in 1890, that of the State of Ohio vs Otto Leuth, the main defense was, that the defendant was controlled by a sudden, uncontrollable, epileptic, homicidal impulse. In that case it was held by the circuit court and affirmed by the supreme court that a defense of sudden, uncontrollable, epileptic, homicidal impulse was governed by the legal rules, affecting other rules of insanity. The circuit court in its opinion says, "The defense made in this case is that of temporary insanity, although the counsel for the defense expressly disclaim idiocy, insanity, dementia, or amentia, yet it is apparent that the real defense attempted is that Otto Leuth killed Maggie Thompson in a sudden fit of homicidal and uncontrollable frenzy, resulting from epilepsy. The leading case on that defense in this State is, and probably always will be, the charge to the jury by Judge Birchard, reported in Clark vs the State, 12 Ohio 495. The measure of insanity in the case quoted is as follows:

"Was the accused a free agent in forming the purpose to kill? Was he at the time capable of judging whether that act was right or wrong, and did he know at the time that it was an offense against the laws of God and man?" And this is the test in Ohio today.

From the foregoing Ohio tests it will be seen that they include all the elements of the tests laid down by the courts in Alabama, with the exception that the courts have not indicated, that in cases where the accused, by reason of duress, had so far lost the power of choosing between right and wrong as to avoid doing the act in question, as that his free agency was at the time destroyed, is required to connect the act with whatever mental disease he might have been suffering in such a relation to cause and effect, as to show that the act was a product of such mental disease solely.

I believe that the test in Ohio is broader and more favorable to the accused than the Alabama test. If anything, it is too broad, in that the element of connection between the mental disease and the act is not required to be found by the jury in cases of irresistible impulse, where the accused could distinguish right from wrong as applied to the particular act in question.

There are other elements which could be said to form part of the test of responsibility. For instance, the burden of proof, but that is largely a question of evidence and cannot be treated within the time allowed me this evening.

In conclusion, it is my opinion that much of the controversy between the medical and legal professions as to the proper test of responsibility in the cases under discussion, has been brought about by the fact that the members of the medical profession are the product of schools which, the world over, in general follow certain rules for their guidance and which rules can, with no lack of propriety, be applied in different localities; whereas the administrators of the law must adjust themselves to the needs of the different communities, in the same degree as different communities vary in their law.

The tests laid down in Ohio and Alabama, in my judgment cover the needs of every community in this country, and I see no necessity for any change in them. Even insofar as the accused is concerned, it insures to him a just test, and each of them covers every phase of insane mental action that has been brought to my attention. When the necessity for a new test arises, as it may upon new discoveries that can be demonstrated by the medical profession to a reasonable degree of certainty, I have no doubt that the courts will, as they have in the past, so amend the rules or tests of responsibility as that no injustice shall be done to the defendant, and at the same time the rights of the State will be protected.

518 Citizens Bldg.

Tests of Insanity in the Criminal Court.

By A. B. HOWARD, M. D., Cleveland.

The test of insanity in the criminal court resolves itself into one term, that of responsibility. To determine the responsibility of the individual one must ascertain the character of his mind. Mercier says that, "the central and essential disorder in insanity is a derangement in the mode of working of the supreme regions of the brain and that the symptoms comprise, disorder of conduct, disorder of bodily function and disorder of mind. That such disorder is present in every case of insanity but that each class may not be equally prominent."

We are also taught that the processes of the mind are feeling, thinking, willing and acting; that perception is one of the faculties of mind and that erroneous perceptions constitute what are known as illusions and hallucinations. We have hallucinations of all the special senses of hearing, seeing, tasting and smelling and when these are present in any order they constitute one of the main symptoms of insanity. The patient may, for instance, have hallucinations of hearing, receiving a command from God to kill or destroy, and when he acts in accordance with that command he feels compelled to act because he is controlled entirely by the hallucination and therefore is not acting as a free agent or a responsible person, consequently he could not be regarded as such.

That which holds good in the case of auditory hallucinations can also be applied to hallucinations of smell. About two years ago a man was brought to the Cleveland State Hospital after

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having killed two of his own children. When asked why he did so he replied, that he detected a cadaverous odor emanating from the body of each child; that he himself had been afflicted in the same manner for years and that they had inherited it from him and rather than have them go through life with such disgrace upon them he felt it his duty to kill them. Evidence in this case also showed that the act was prompted by hallucination and the patient irresponsible.

The most frequent hallucinations of sight are those which occur most particularly at night. The so-called visions: God, angels, dead persons, distorted figures. The patients see all sorts of animals about them, rats and serpents crawling over their beds, insects upon their food and clothing. At times they will see crowds pursuing them, faces making grimaces at the window; frequently they mistake strangers for relatives. Especially do these conditions arise in the alcoholic psychoses.

But the most important functions of the intellect are those of reasoning and judgment and when these functions are disordered by clouding of consciousness, emotional states, mental weakness and the inability of the individual to properly appreciate his environment and the data furnished by his environment, delusional states develop. Delusions entertained by the insane are variously classified as systematized or unsystematized, depressive or exalted. Among the depressive delusions self-accusations are most frequent. The patient manifests a feeling of unworthiness, he reviews his past life as one of sin and disgrace, even God has forsaken him and he is left to be punished in some horrible manner. Related to these delusions are fears of poverty, loss of home or property, or the fear of some impending danger to self or relations. When delusions of jealousy exist feelings of doubt and suspicion may arise. All assertions of love and friendship are disbelieved; the patient observes a coolness in members of his family; the wife appears embarrassed in his presence, shows surprise if he returns home at an unusual hour, coughs in a significant manner or communicates by signs with others who are plotting against him.

The expansive or exalted types differ materially from the depressive inasmuch as the patient exhibits a sense of well-being. The external relations of the patient, the social position and property are transformed by delusions. He tells of his noble descent or that he is Christ, God or the Pope or he boasts of his untold wealth and vast estates. During a recent conversation with a patient he told me he was going to transplant an entire forest, the trees were to be raised by an immense electric magnet, that he was going to build railroad coaches of aluminum each coach to accommodate 25,000 people and that the speed of the train was to be 100 miles per minute. That he was to resurrect the bodies of Washington, Lincoln, Garfield and others, and that he had already begun the resurrection of the Egyptian mummies. Not infrequently do these people contract debts, buying expensive articles and offering worthless checks in payment, or they dispose of their property at a sacrifice, thus embarrassing their business and relatives. If the delusions are of a persecutory nature the patient discovers intrigue among his shop mates, he knows that in many ways they are plotting against him, if he goes on the street he sees people looking at him suspiciously or making signs.

The examples of the delusions above related show very clearly that when delusions are present in an individual the reasoning and judgment is greatly disturbed, therefore false beliefs or delusions constitute one of the most important medico-legal tests of insanity.

The emotional states and feelings of an individual are direct indications of his attitude toward his perceptions of the external world and disturbances of the emotional life often form the first striking symptom of insanity. Perhaps there is no better way to determine the true mental condition of the insane patient than by his conduct or his emotional acting. Not by any single act he might perform but by the excessive or extravagant conduct which is entirely foreign to the individual's former self, and while in the exalted type there is an unusual activity in his conduct it is at the same time inconsistent and defective. Not only is there absolute loss of control but the patient seems to have lost the ability to recognize the uselessness of his efforts.

Another important state is that of persistent morbid emotions. Such conditions as sadness when temporary gloom seems to pervade experience inducing painful thoughts, fears, distrust and frequently delusions of persecution and self-accusation. Fear is by far the most important morbid emotion and varies from lighter grades such as timidity and cowardice to obsessional ideas. Obsessions are disturbances of the will and characterized by morbid fears or morbid ideas. The obsessive ideas especially are important factors in the determination of responsibility, for as a rule such ideas are serious and real, the only unreasonable thing about them is their persistence, in fact they often dominate the individual and it is not infrequent that people suffering from obsessions ask to be restrained or confined to prevent them from doing some terrible act that they feel they cannot resist.

There is a disease which is of much importance both to the medical and legal profession known as epilepsy. An epileptic during the interval between his seizures is, as a rule, regarded as sane but there are times just before the paroxysm, during it, or immediately following it when the individual is in such a peculiar state of mind that he would be regarded as insane or irresponsible for acts committed during this period of temporary aberration. Occasionally the epileptic seizure does not occur, but rather what is designated as an epileptic equivalent, by this is meant a period of apparent unconsciousness in which the individual may perform automatic acts or have violent maniacal outbreaks and commit crimes of which he has no knowledge when the condition subsides. In all epileptic convulsions there is a complete loss of consciousness, the patient having no memory whatever of any occurrence which might have taken place during the seizure, and frequently there is an absence of memory for several hours after the attack. In some cases an epileptic seizure is followed by a peculiar state of mind lasting from a few hours to several days in which there is more or less clouding of consciousness and the acts performed during this time are in the nature of automatic acts of which the patient has no memory when he again returns to his normal status. Therefore it is the accepted opinion that any act, whether it is criminal or not, committed by an epileptic patient during the periods mentioned is wholly irresponsible. True it is that there are persons, that exhibit a peculiar mental condition all through life, whom it might be difficult to class as insane or irresponsible but who from their eccentric or perverted characteristics, weak or moral delinquency, demand consideration and whose actions should be investigated. It is in such cases that a partial or attenuated responsibility exists.

In consideration of the facts that are advanced in all such cases, notwithstanding the opportunity afforded the legal profession to propound hypothetical questions, it would appear that the physician in making his examination has only the medical points in the case to consider. That is to say, he has nothing whatever to do with the outside circumstances surrounding the act, he has to determine only the condition of the brain cells so that it matters not what the case may be or whether it is due to influences of heredity. In the case of traumatism, syphilitic or alcoholic poisons, epilepsy, dissipation, excesses, tumors, or any other known cause the question is: Are the brain cells properly performing their functions? "An individual whose brain cells are normal is a responsible being," says Grasset, "and that consists in responding as other men do to the influence of ordinary motives of every day life which rule conduct and human action. If the brain cells are wholly diseased and abnormal the individual is irresponsible."

736 Rose Bldg.

The Essentials in the Treatment of Non-Ambulatory Cripples Deformed by Infantile Paralysis.

By HENRY O. FEISS, M. D.,
Assistant in the Dispensary, Lakeside Hospital, Cleveland, O.

The term "non-ambulatory" is used for lack of a better one. It refers to those patients who have become so deformed by infantile paralysis that they are unable to stand or walk, and the chief object of this paper is to show how they may be placed on their feet. The cases are not uncommon, especially among the poorer classes. The chief cause of the condition is the fact that after the original paralysis, recovery has been permitted without any regard to the contraction of the good muscles. The result is that the joints contract, so that even if there is sufficient power left in the muscles about the joints to permit stability, the contractures prevent them from being placed in positions where this power can be properly applied. In cases where there have been no contractures, the non-ambulatory condition is due to failure to use proper mechanical measures. Of course some of these cases are hopeless.

Occasionally, we find that the only contractures are in the feet and ankles. If such deformities (equinus, equino-varus, etc.) are marked, they might alone in early childhood prevent standing and walking, and in such cases the treatment simply consists in correcting these deformities.

More frequently, the cause of the disability is the contracture of the hamstrings of the knees and the anterior flexors of the hips. The treatment of such cases requires the most careful attention and perseverance; the difficulties increasing in direct ratio to the age of the child and also in relation to the length of time from the original onset. If a case is seen early, that is soon after the de-

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formity has taken place, gradual straightening can often be brought about by means of simple braces, splints or plasters. It is usually found that the contractures of the hips are secondary to the flexures of the knee. For this reason, if the knee contractures are straightened out the hips will often straighten themselves, owing to the weight of the extended limb. The straightening out of the knee contractures is not always a simple procedure. It is commonly believed that if sufficient force is applied the knee will straighten out and once made straight, the case is disposed of. This would be true if it were not for the danger accompanying the procedure. One has no right to use too much force in the correction of the knee, because if such a knee has been in a position of permanent flexion for years and is then straightened out all at once, the vessels and nerves will be placed on a sudden stretch and changes in the circulation might arise and, in some cases perhaps, even lead to gangrene. Therefore, this correction must be made with the greatest care.

If the case is of long standing, the best way is to etherize the patient and to use a moderate amount of force. If headway is made, further manipulation with or without ether, by changes of plasters or by caliper splints may finish the correction, but when this is not sufficient, an open operation is to be done and the hamstring tendons are to be lengthened by some simple method. After the correction of the knee by either of these methods, the foot must be watched for change of color. If there is any noticeable changes in the circulation the plaster must be removed and a little flexion allowed for the time being. In a few weeks or months another manipulation will probably finish the straightening. The same precautions are, of course, necessary at the ankle if the foot is badly deformed.

With regard to the hip, it is difficult to gain much by the application of force. In the attempt to extend the thigh, lordosis takes place in the lumbar spine so that little is really gained in the hip joint itself. Here it is advisable to do an open operation over the contracted part, which is almost always the tensor vaginae femoris, and simply divide the tight strands. In this operation, it is surprising how many contracted strands will be found. After these are divided, no great correction is usually gained and the surgeon is liable to become badly discouraged, but after a few days, he will notice the leg coming down farther, and if he lays the patient on a padded board or Bradford frame and binds down the pelvis and knees, he will soon have the hip straight. In some cases passive motion exerted every day after the first week or so will hasten the correction.

It is apparent from the anatomy of the parts that little leverage can be gained at the hip unless the knee is straightened out first; then, with the leg straight, the correction at the hip can proceed without much difficulty. Moreover, as stated above, the weight of the whole leg acts as a force in maintaining the straightness of the hip; whereas, if the knees were bent such weight could not be applied.. Often after the attempt to straighten out the hip, there is some lordosis left on account of residual hip contraction; usually, however, if the patient is not too old, even this gradually obliterates after the patient stands, because the tendency of the human frame in standing and walking is to stretch the anterior thigh muscles.

The above procedures form the first essential part of the treatment of these non-ambulatory cases—namely, to straighten out every deformity in the ankle, knee and hip by gradual correction when it can be applied, or if necessary, by forcible manipulation under ether or finally, by cutting operations when force alone is not sufficient.

Assuming now that the patient has been properly straightened out, the next stage in the treatment must be to attempt to get the patient on his feet. It is wise in many cases, to put on the simplest form of apparatus and I have been accustomed to use so-called "caliper" braces (these are temporary braces to be replaced later by permanent ones), which consist of two uprights of round stock running into the heel of the shoe below and ending above in a perineal ring. A strap is placed behind the knee to prevent hyperextension and a knee-pad is placed in front of the knee to prevent flexion. Such a brace insures stability in the whole leg up to the hip. If there is any tendency to recurrence of equinus, simple stops can be placed at the heel to prevent this deformity, or straps may be run from the sole of the shoe to the uprights, which can be adjusted so as to hold the ankle at the desired angle. After these are properly adjusted and the patient has become used to wearing them, he is given crutches and in most cases learns to walk with them very soon. After a few months the patient is told to try to discard the crutches and to take steps for himself. This having been achieved, then is the time for reconsideration of the case with regard to plastic operations on the muscles and joints with the hope of eventually discarding one or both braces, or changing from a knee-brace to an ankle-brace. The choice of operation here depends entirely on the conditions in the individual case. We must consider tendon transplantations, shortening or lengthening of tendons, arthrodeses, excisions, etc., every joint being considered by itself.

As the main object of this paper is to show how these patients may be put upon their feet, the further treatment (permanent braces and operations) will not be considered here, but in the report of the cases which follows, brief mention is made of some of the subsequent steps.

The only contra-indication for the above treatment is when the mechanical conditions for recovery are so bad that the case is hopeless For example, if the spinal muscles and hip muscles are all paralyzed, and when the child has no power in the shoulders, elbows and hands to hold crutches. Practically all other cases may be placed upon their feet.

Following is a summary of nine cases, which have been selected to show the various steps which have been taken. All of these were helpless when first seen and crept about the floor. All of these have now been enabled to walk, some with crutches, some with braces alone, and some with but one brace.

Case I. E. J., aged 22 months, was first seen at Lakeside Dispensary, March 29, 1909. A year ago was taken with paralysis and made progress until a month ago.

Examination showed the child not able to stand or walk. Seemed to have power in the quadriceps and hamstrings on the left side but none in the foot on that side. Could extend the right knee in external rotation; this foot under control. May 13, 1909, caliper splints were applied. The child is now beginning to stand and walk. Here no operation has yet been advisable.

*Case II. S. J., aged four, was first seen in the Lakeside Dispensary March 21, 1908, the paralysis having begun two years previously.

The examination showed pretty good control of the left leg except that the foot was in valgus. The right knee was not under control either in flexion or extension and the foot was in marked varus. Child could neither stand nor walk.

June 1, 1908. The right tendo achillis was divided and a brace was applied to the right leg holding the knee straight and the foot at a right angle. Later on, the tendo achillis on the right foot again contracted and a tenotomy was done at Rainbow Cottage. Examination July 9, 1909, showed the child walking with a brace and without her crutches.

Case III. N. M., aged four, was first seen at Lakeside Dispensary March 10, 1908. Taken with paralysis while an infant. The case was originally treated by Dr Dudley Allen, who kindly assigned it to the author for further treatment. When first seen by him the child could not stand or walk, although there was little contraction. He ordered braces and with the help of these and crutches, the child learned to stand and walk. On June 13, 1908, the child was walking without crutches with the help of both braces. March 24, 1909, operation: the tendo achillis divided on each foot and the iliotibial band transplanted into the quadriceps

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*For the treatment of cases II, III, IV and V in the hospital wards, I am indebted to the kindness of Dr Dudley P. Allen.

on the right. The child is now walking fairly well but is still using a brace on the right leg.

Case IV. A. S., aged eight, was first seen at Lakeside Dispensary Sept. 19, 1909. Paralysis had begun three years before. There had been no improvement since. Examination showed both legs very thin and no control of either ankles or knees. The right hip in a position of 45° flexion. Child could neither stand nor walk. Sept. 23, 1908, operation: the tensor vaginae femoris was divided. The tendo achillis divided on the right foot. When last seen, July 1, 1909, child was walking with caliper splints and crutches.

Case IV. A. B., aged three, was first seen at Lakeside Dispensary May 19, 1908. This child was taken with paralysis at the age of nine months. Examination showed thighs abducted, knees flexed and ankles extended. Child could neither stand nor walk. Each leg showed that it could adduct and move the thigh pretty well. Flexion of the knee permitted, but no power in extension. The hamstrings were short. Some power in eversion in the ankles. Each tendo achillis was contracted. June 1, 1908, operation under ether: knees forcibly corrected. Tendo achillis lengthened on each foot by open operation. June 28, 1908, patient has learned to walk by means of caliper braces and has discarded crutches. Condition then showed recontraction of the tendo achillis but the knees straight. June 29, 1909, operation under ether: on the right the sartorius transplanted into the quadriceps tendon and the biceps transplanted into the tubercle of the tibia by means of silk lengthenings. Each tendo achillis tenotomized. Later the silk sloughed out, but the sartorius has held. Similar operation to be done later on the other knee. Child still using caliper braces, but will undoubtedly discard at least one later on.

Case VI. E. P., three years old, was first seen Sept. 21, 1906. The paralysis began at the age of two years and the child could only creep and sit. Examination showed a small, anemic child with right hip in right angle abduction. No control of the knee or ankle. Oct. 5, 1906, under ether, tenotomy of the tight bands running from the anterior superior spine. Hip straightened and put up in plaster. Child learned to walk in this plaster and improved. A brace was applied February 1907, and since then the child has learned to walk alone.

Aug. 7, 1909. Child is walking without crutches but with a permanent brace on the right leg. This brace holds the knee straight and prevents toe-drop. Child almost ready for an operation on the knee, transplanting the sartorius and later, to have an arthrodesis of the ankle.

Case VII. F. Q., six years old, was first seen July 7, 1908. Taken with paralysis at the age of one year. Examination showed both knees and hips drawn up. Hips could not be passively extended. Tensor fascia very tight. The contraction less than a right angle on the right. Very little less contraction on the left. Both knees drawn up tight and could only be extended to 45° of straight. No quadriceps. Hamstrings present on the left and partly deficient on the right. The hips besides being flexed were also abducted, so that the child lay in a frog position. Child could neither stand nor walk. July 23, 1908, operation under ether: attachments of the tensor vaginae femoris and a mass of other muscular tissue and bands were divided at both hips. This permitted the thighs to come down to an angle of 120°. The knees were forcibly corrected to about 40° of straight. Then the pelvis, thighs and knees were encased in plaster and the child was placed on a Bradford frame. Caliper splints were applied on July 28, because the plaster was very uncomfortable.

Aug. 29, 1908. Patient was learning to walk with crutches, both hips having been brought down by passive motion to 35° of straight. The knees were almost straight. Oct. 21, 1908, there was no deformity left, even with the braces off. On May 20, 1909, the status was as follows: She can extend neither knee. Has no control of the right ankle but it is not in a position of permanent deformity. She dorsal and plantar flexes the left foot. She walks alone with the caliper splints. July 13, 1909, plastic operations were attempted at the knee. These have been succeeded; nevertheless, she will be enabled to walk with the help of light knee braces.

Case VIII. M. McK., aged seven, was first seen November 14, 1905. She was taken with severe paralysis at the age of three and a half, affecting both legs and the left arm. The arm recovered. Examination showed both hips in slight position of abduction and flexion. Knees were contracted to a right angle. Tendo achillis in both ankles tightened. Very little control over either foot. Child unable to stand or walk.

An operation was done May 2, 1907. On the right knee the hamstrings were divided. Same on the left. Each tendo achillis also lengthened. Gradually the legs became straighter and she got caliper splints May 18, 1907. She was walking June 25, 1907, with the help of crutches and braces. In the summer of 1908, a tendon transplantation was done on the right knee using the outer hamstrings and one of the inner ones. The result of this is not yet certain, but she is walking now without crutches and with the use of her braces alone. The reason that the knee operation is not certain is because the foot is still in a very bad position of varus which will have to be corrected before she can stand without a brace.

Case IX. M. S., aged 11, was seen first Jan. 27, 1908. Taken with paralysis the previous September. The attending physician allowed her knees to contract. Examination showed the left leg in a position of 25° permanent flexion at the knee on account of the tight hamstrings. The right was more flexed than the left. She had apparently complete control of the left side except for the contraction. The right was atrophied and showed apparently a paralysis of the quadriceps and tibialis posticus, the peroneus longus being very active.

No operation was necessary here, the case being seen recently enough after the onset. Caliper braces were applied with the intention of gradually straightening out the legs. This was easily accomplished with the help of a good nurse. Passive motion was also used. On March 8, 1908, she had complete control of the left which was straight: patient very much improved and could stand alone with the brace only on the right leg and walk with crutches. March 18, 1908, patient was walking without crutches and with the brace only on the right leg. April 10, 1909, a very simple leather brace with two uprights was applied to hold the right knee steady, and the girl is still wearing this without the help of any other apparatus and getting about. Later a transplantation may be done on the right knee so as to do away, if possible, with all apparatus.

418 Lennox Bldg.

The Smith Cataract Extraction of the Lens in the Capsule.

By ALBERT RUFUS BAKER, M. D., Cleveland.

A brief report of my first year's experience with the Smith operation for cataract extraction, it seemed to me, might be interesting to the members of the Section. I have taken every opportunity of seeing Dr Green and others do the operation, so that I have witnessed, and in some cases assisted in about 15 operations; this, together with 10 extractions I have done myself, makes altogether about 25 cases that I have seen, a very small number indeed, yet the operation will largely stand or fall by the verdict

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Read before the Ophthalmological and Oto-Laryngological Section of the Academy of Medicine of Cleveland, November 26, 1909.

of American and European ophthalmic surgeons, few of whom have had an opportunity to do more than 30 or 40 extractions a year and cannot of course have the wide experience of Major Smith in India.

The operation itself is more difficult than the ordinary procedure. The incision must be larger and rather peripheral. The iridectomy for some reason has been more difficult in my experience, probably because I have not definitely decided in my own mind what kind of an iridectomy is best; I am inclined to think the smaller the better. That critical period in the operation, the delivery of the lens, in which the fortitude of the patient and surgeon is taxed to the utmost, lasts in the usual operation only a few seconds at most, while in the Smith operation it may be extended to many minutes. I find this taxes the qualities of the assistant almost as much as the operator. I should have employed the Smith operation in several other cases during the year if I had been sure that my assistant would not lose his nerve at a critical moment. The toilet of the wound has almost to be trusted to luck because any meddling after the operation is almost sure to cause loss of vitreous, but the difficulties are not insurmountable. The operation is a practicable one and if the visual results are such as to make it the operation of choice we can do it.

If the Smith operation increases very materially the number of cases of total loss of vision it cannot replace the usual operation; this may be purely a question of surgical technic.

The question of after healing, ciliary inflammation, corneal inflammation, and opacity can be determined only by a large number of cases. From my limited experience I would say (Dr Green's statement to the contrary notwithstanding) that there is more inflammatory reaction, more pain and slower healing than in the old operation. This was one of the principal reasons for giving up the simple extraction as an operation of choice. The cases without an iridectomy need more and better nursing, and even then are followed by more severe complications, the most serious of course being prolapse of iris. It will be noted that in two of these 10 cases of mine there was prolapse of iris, in one quite serious, necessitating a second operation and eventually resulting in blindness from detachment of retina; the other, the patient I show you tonight, you will see a slight incarceration of the iris at the external angle but the eye has been perfectly quiet and the vision satisfactory (20/30). In both cases the prolapse probably followed slight injury, in one patient on the second night after the operation and in the other on the fifth night after the operation.

While the technic of my operations may not have been quite as smooth as with a wider experience, yet on the whole there is little to criticize from an operative standpoint. Of the two cases in which there was loss of vitreous, in one it followed the incision and would have done the same in any operation. In the other there escaped only a drop or two of fluid vitreous, after the lens was delivered. In both cases healing was prompt and satisfactory. In every case the lens was delivered in the capsule and the only other accident was the prolapse of iris as noted above.

In two of the patients the usual operation had been done on the fellow eye and the vision was not satisfactory; but in neither of the cases was the vision any better when the lens was extracted in the capsule. It is probable that in both of these cases there are retinal or choroidal changes which account for the poor vision. We often forget, as Risely has pointed out so often, that patients have cataracts because of choroidal or some other disease and it is unreasonable to expect perfect vision in all cases.

The few cases I have to report cannot be of much value except when combined with those of other operators as to visual results. I have tabulated my cases and also 20 other consecutive operations performed during the year. None of those in which Smith's procedure was followed needed secondary operations, some of the others did and more will. Not counting the case of extraction by the Smith method in which vision has since been lost from detachment of retina, the results as regards vision are not, on the whole, as good as in the older operation.

Case 1. Mr. K., aged 30, was first seen in Aug. 1900. Vision with — 4.50 about 20/100 in each eye. Anterior polar cataracts with slight opacity throughout lenses. Vision gradually failed so that in Jan. 1909 he was only able to see about 3/200. Extracted lens of right eye in capsule Jan. 5, 1909. He injured the eye on the night of Jan. 7. Next morning I found the bandages stained with fresh blood and the anterior chamber full of blood. By Jan. 12 the blood was apparently absorbed and he was discharged from the hospital on Jan. 20. Slight incarceration of iris at outer angle. Vision Mar. 6, 1909, with +10, 20/30.

Case 2. Mr. K. (same as Case 1). Smith extraction in the capsule was done on the left eye, Sept. 14, 1909. Operation and after healing smooth. Discharged from the hospital on Sept. 24. Vision with +10, 20/200. Retinscopy, $+7 \smile +6$, axis 75, but cylindrical correction does not seem to improve vision. I have noticed a steady improvement, however, in the vision of several patients who had had Smith extractions.

Case 3. Mrs. C., aged 65. My first Smith operation upon whom I had performed a preliminary iridectomy. She behaved well after that operation. On Oct. 28, 1908, I extracted the lens. She squeezed the eye viciously and there was an escape of vitreous before I made any attempt to deliver the lens. I was obliged to use the spoon. Lens was delivered in capsule. Patient was very unruly, the night following the operation, and tore off the bandages and chased the nurse out of the ward and through the halls. Was wildly delirious and unmanageable for several days (possibly alcoholic). Uninterrupted recovery of the eye; vision is 20/70, but would be much better if it were not for an old central opacity of the cornea.

Case 4. Mrs. Q., aged 62. Lens extracted with usual operation with preliminary iridectomy, May 14, 1907. Vision 20/60 with + 13. Slight capsular opacity which was not much improved by needling. Extracted lens of right eye in the capsule April, 1909. Operation and healing smooth. Vision 20/200 with + 3. Patient, as well as myself, was much disappointed that vision was not better, as I had promised better results.

Case 5. Mr. M., aged 65. Diagnosis of hemorrhage of retina was made three years ago at Lakeside Dispensary. Extracted right lens by Smith operation June 25, 1909. Patient was nervous, but I succeeded in extracting lens in capsule without accident; recovery smooth. Vision Sept. 8, 20/200 with + 10.

Case 6. Mr. L., aged 43. Operation, Smith extraction, April 13, 1909. Operation smooth, anterior chamber reformed and everything favorable until the fifth day. Suddenly during the following night he developed pain in the eye and when bandages were removed I found a large prolapse of the iris. Followed about the usual course these cases do after a simple extraction. Later I removed prolapse of iris. Eye quiet, pupil displaced upward, vision 20/100 with + 10. Patient returned Nov. 24, 1909, with extensive detachment of retina and only slight perception of light. One of those unfortunate cases in which the operation was a success but the patient blind.

Case 7. Mrs. H., aged 72. Performed Smith operation Oct. 19, 1908. Operation and healing smooth. Nov. 6, vision 20/70 with + 10 ○ + 2 axis 180. Dec. 16, 1908, vision 20/60 +. Vision gradually improved so that at present time it is 20/20 with + 10.

Case 8. Mrs. P., aged 55. Performed Smith operation June 29, 1909. Operation and recovery very satisfactory. Vision Sept. 23, 1909, 20/15 with + 10.

Case 9. Mr. M., aged 35. Performed Smith operation Sept. 29, 1908. Two weeks afterwards the vision was 20/70 with + 7. Is very much better at present, although I do not have the record of it.

Case 10. Mr. A., aged 74. First operation on left eye, was combined extraction, Oct. 26, 1908. Capsular opacitics. After needling, vision 20/200 with + 10. On March 26, 1909, Smith operation; smooth without complication. Vision 20/200. No better Nov. 16, 1909, like case 4, in which I promised better vision but did not get it.

Vision in 10 cases after the Smith extraction:

1. Mrs. C. ......vision = 20/70
2. Mr. K. ...... " = 20/30
3. Mr. K. ...... " = 20/200
4. Mrs. Q. ..... " = 20/200
5. Mr. M. ...... " = 20/200
6. Mr. L. ....vision = 00/00
7. Mrs. H. ...... " = 20/20
8. Mrs. P. ...... " = 20/15
9 Mr. M. .... " = 20/70
10. Mr. A. .... " = 20/200

Vision in 20 consecutive cases during same year; usual extraction:

1. Mr. T....vision = 20/40
2. Mrs. S.... " = 20/40
3. Mr. M.... " = 20/40
4. Mrs. M... " = 20/70
5. Mrs. R... " = 20/200
6. Mr. P.... " = 20/30
7. Mr. P.... " = 20/200
8. Mr. B.... " = 20/20
9. Mr. B.... " = 20/20
10. Mr. P.... " = 20/200
11. Mr. P....vision = 20/70
12. Mrs. B.... " = 20/60
13. Mrs. B.... " = 20/40
14. Mrs. P... " = 20/40
15. Mrs. K... " = 20/20
16. Mrs. K... " = 20/20
17. Mrs. S.... " = 20/40
18. Mrs. A.... " = 20/200
19. Mrs. Q... " = 20/30
20. Mrs. P.... " = 20/20

636 Rose Bldg.

Hemorrhagic Varicella, With Report of a Case.

By RALPH W. ELLIOTT, M. D., Cleveland.

The fact that serious complications and sequelae are very rare in varicella no doubt accounts for the scarcity of the literature describing unusual forms of this disease. However, fatal cases have been reported as a result of gangrene of the skin, erysipelas, pyemia, parotitis, bronchitis, bronchopneumonia and nephritis.

The following case seems to be well worth reporting because it is an unusual complication of such a common disease:

The patient, a boy four years of age, and two brothers were all taken sick at about the same time with what the mother diagnosed as chickenpox. Neighbors with children ill of the same disease advised as to treatment. The boy was not sick and had to be punished to keep from playing outdoors in the rain and mud. The rash first appeared on October 13. On the evening of October 17 he complained of stomachache. He did not sleep well that night and in the morning vomited a little blood, mostly clotted. It had not been thought necessary up to this time to call a physician.

Upon examination, most of the vesicles had healed but many still retained scabs, presenting the appearance and distribution of varicella of moderate severity. Petechiae and ecchymoses were scattered over the entire body. The former being more numerous on the face, thorax and abdomen, while the latter were quite generally distributed over the scalp and lower extremities. The petechiae, about the size of the head of a pin, were very numerous, purple in color and not raised above the skin surface. Here and there was larger ones, about the size of the ordinary vesicles and of equal number. Six or seven areas of ecchymoses from 1.0 cm. to 1.5 cm. in diameter, regular in outline and circular or oval in shape were found on the scalp. Three on the forehead just at the hair line and the others above the ears. One area under the right eye looked like a bruise. A few irregular areas of ecchymosis were found on the abdomen and back, averaging 1 cm. in diameter. On the outer sides of the thighs and legs and over the shins hemorrhagic areas were much more numerous there being 15 or 20. The largest measured about 3 x 5 cm.

In the mouth, five circular hemorrhagic areas, of a deep purple hue, slightly raised above the level of the mucous membrane were observed on the under surface of the tongue near its margin. There were also a few partly healed vesicles on the dorsum of the tongue and on the inner side of the cheek. The tonsils were enlarged, dusky red, and on each were from four to six discrete hemorrhagic spots similar to those on the tongue. The heart and lungs were clear, the abdomen moderately distended and slightly tender in the epigastrium. The liver dulness was not increased and the spleen could not be palpated. The lymph glands over the entire body were palpable; the posterior cervical group being visible. The patient felt perfectly well and could not understand why he should remain in bed. The temperature was 99.6° F. and the pulse 84. Early in the afternoon he passed blood from the bowels, mostly clotted, but there was also considerable red blood.

During the night he passed 10 ounces of urine, which was dark red in color with a thick, heavy sediment. The specimen was acid in reaction; specific gravity 1.018; contained a large amount of albumin but no sugar. On microscopic examination, there were many red blood cells, in fact the

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slide looked more like a blood smear than a specimen of urine. There were no casts. A few fresh areas of hemorrhage had appeared in the mouth on the inner side of the cheek, and over the hard palate, about half the size of those on the tongue and tonsils. The pharynx could not be examined in detail on account of the condition of the tonsils but was somewhat congested as was the mucous membrane over the soft palate.

By the next morning, October 20, the vesicles on the tongue were much better, in fact, almost healed. Two fresh spots had appeared on the mucous membrane, of the lower lip close to the vermillion border. The areas on the tonsils had become confluent with here and there breaks in the mucous membrane which exposed a base to which the blood adhered closely. The urine was clearer with less sediment and no casts. The patient had a natural bowel movement that morning, containing clots but no bright red blood. The temperature was 99° F. and the pulse was 100.

Shortly afterward the patient swallowed a small piece of chewing gum which could not be dislodged. The respiration became labored, the pulse rapid and weak, the pupils were dilated, and the face had a dusky hue. An attempt made under ether to recover the gum failed on account of the condition of the throat, the tonsils still being much swollen. The pulse had become so extremely rapid that a tracheotomy was done at once to save the boy's life. Recovery from the operation was uneventful. The respiration was easy and there was very little mucus. It was interesting to note that the blood clotted readily in the wound.

The next morning, October 21, the temperature was nearly normal and pulse 120, though during the night the temperature had been up to 100° F. and the pulse to 160. Urine had cleared greatly, still contained blood, but no casts. The patient suffered no inconvenience from the tracheotomy tube. The pulse was rapid but of good volume. The heart and lungs were clear. He took liquids freely. A hemorrhagic spot the size of a pin head had appeared on the conjunctiva of the lower lid and one just below the iris of the left eye. Ecchymoses on the scalp and legs had begun to fade, those on the tongue and cheeks were practically healed.

A stool passed during the morning of October 22, was normal but very constipated. The temperature was 100.5° F., pulse 130, good volume. Urine passed about noon was practically normal; no blood visible and but few red cells seen on microscopic examination. The petechiae were fading rapidly and were dusky red in color. The tonsils were clearing and much less swollen. The patient was very bright and much interested in a story read to him during the afternoon. Toward evening he fell into an apparently natural sleep. In about half an hour he was awakened by a slight convulsion. Almost immediately he put both hands to his head, went into a general spasm and died within two or three minutes. A postmortem examination was not permitted.

Petechiae and ecchymoses over a small area are not uncommon in varicella but there are few cases on record of such general involvement, especially of the mucous membranes. Hematuria may occur as a result of varicellous nephritis. Various prodromal rashes have been observed but cases with hemorrhage into or between the vesicles over large areas are fortunately rare.

Rundle[1] describes the case of a boy, aged two years. Two days after the onset of the disease petechiae and ecchymoses were observed scattered somewhat profusely over the trunk, shoulders, thighs and legs. The bases of the ruptured lesions were infiltrated with blood which could not be wiped off with lotions. Later, large areas of subcutaneous hemorrhage appeared over the right shin and in the region of the left hip. That night a large extravasation of blood was noted beneath the ocular conjunctiva of the right side and at midnight a black hemorrhagic staining of the lips and gums. During the night restlessness, delirium, cardiac depression, and other signs of toxemia appeared. The child died on the following morning, the fourth day of the illness.

A case of confluent hemorrhagic eruption in varicella described by Porter[2] in a girl aged 13 years presented such a great number of lesions on the face that the "face felt stiff." The vesicles on the face became confluent on the forehead, over the course of the right temporal artery and on the right side of the neck over the sternomastoid muscle. The next day hemorrhage had taken place into the three regions where the eruption had become confluent; the surface of the pocks in these regions being somewhat flattened but intact and dark purplish-black in color. No further hemorrhage occurred although the vesicles were scattered over the entire body and buccal mucous membrane. There was no blood in the urine and no mention is made of blood in the stools. Recovery was slow.

Andrew[3] describes the case of a boy of eight years who passed stools containing clotted blood, mucus and bright red blood on two days preceding the appearance of the rash. The patient also vomited a little clotted blood. The urine was normal. On the third day a hemorrhagic eruption appeared on the exterior surfaces of the elbows. On the ankles, the spots varied much in size. The diameter of the majority of these was between one and five millimeters. On the ankles there were four large spots with a slightly raised center. A general eruption resembling abortive varicellar spots came out the next day; mingled with it were a few small hemorrhagic spots on the legs and thighs and a few smaller ones on the front of the chest. With the appearance of the rash the temperature fell to normal and the blood in the stools rapidly diminished. The urine was normal throughout. Recovery was rapid and uneventful.

On the third day from the onset of varicella in a boy six months old, Hamann[4] noted that numerous vesicles about the face and head contained blood. Some of the clear vesicles were distinctly umbilicated. There was considerable cerebral depression, at one time almost passing into coma. There were no lesions on the mucous membranes. The child recovered.

A few intravesicular hemorrhages on the left forearm, right knee and left knee were noted by Rolleston[5], during an attack of varicella in a boy of five. There were no spots between the vesicles, nor hemorrhages from the mucosae. Alexander[6] describes a case in which an intense red areola surrounded vesicles on the abdomen and into each hemorrhage had obviously taken place. Above the knees and on the arms were several subcutaneous ecchymoses. After several days the vesicles began to slough exposing the muscles. Slight intestinal hemorrhage was noticed following a period of constipation. The boy later developed tuberculous peritonitis.

A fatal case in a girl of eight years, reported by Comby[7], was characterized by purpura, hemorrhagic vesicles, ecchymosis in the right iliac fossa, pemphigoid bullae, prostration and death on the seventh day of the disease.

From the foregoing cases it is evident that the character and location of the hemorrhage is subject to great variation. Also that the outcome of the case depends not so much on the amount of blood lost but upon the site of the hemorrhage. In all the cases, too, the coagulability of the blood was evidently unchanged. In none was there any nephritis; in my case the hemorrhage seemed to be entirely from the bladder.

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EDITORIAL.

A Further Plea for Medical Inspection in our Public Schools.

In the October number of this Journal there appeared a communication from the Committee on Sanitation of the Chamber of Commerce, urging the importance of medical inspection of schools. We feel that the message is of such value that we herewith present a further argument in favor of its adoption.

Public schools are public trusts. When the parent delivers his child to their care, he has a right to insist that the child, under the supervision of the school authorities, shall be safe from harm, and will be returned to him in at least as good condition as he was at first. Not only have parents the right to claim such protection, but the child himself has the right to claim it. In the words of Dr William H. Allen: "When the State for its own protection, compels a child to go to school, it pledges itself not to injure itself by injuring the child." We are beginning to find out that many of our backward pupils are backward purely and simply because, through physical defects, they are unable to handle the work of the school process. Educational wastage can be prevented, first, by preparing the children for their education; and secondly, by adapting the educational system to the physiologic requirements of certain groups of children.

Our schools are very much like a machine, in which the child is molded and finished by various processes—unhappily but few come forth as a truly finished product. The tendency is to consider children as a massed entity, rather than as individuals with varied inheritances and mental and physical peculiarities. Our public schools should be sufficiently flexible to permit the child to adapt himself to the modern school demands with the least strain on the nervous system, for no amount of training will get a strong mind out of a weak brain, and this brain physique must depend upon the health and vigor of the entire organism during the formative period of development. Thus it is of the utmost importance to a sound and successful education that health be maintained at the highest level, and the condition determining health must therefore be of vital interest and importance in the management of school life.

Is it too much to ask that the teacher exercise a gentle and humane interest in those whose eyesight and hearing are impaired, to observe a watchful care for the child who may have a weak or crooked back which will become aggravated by close confinement at improperly constructed desks, and illy adjusted seats, or of the child whose lungs are handicapped with the incipient germs of tuberculosis, encouraged by the protracted inhalation of vitiated air?

Or to observe the languishing child who is suffering from mental overstrain and too little exercise, or want of proper and sufficient food? This parental interest in the physical defects of childhood is a demand made upon the Board of Education and the conscientious and self-sacrificing teacher.

Education without health is useless. It would be better to sacrifice the education, if, in order to attain it, the child must lay down his good health as the price. The objection that the State has no right to permit or require medical inspection of the children in the schools, will not bear close scrutiny or logical analysis. Nor is the State, in assuming the medical oversight of the pupils in the public schools, trespassing upon the domain of private rights and initiative.

Under medical inspection absolutely nothing is done but to tell the parent of the needs of his child, of which he might otherwise have been in ignorance. It leaves it to the parent to meet those needs. It leaves him with a larger responsibility than before, and it is only when the parent refuses to accept this responsibility that the State is justified in stepping in and performing this duty. The justification of the State in assuming the function of education, and in making that education compulsory, is to insure its own preservation and efficiency. In order to insure the efficiency of its citizens, the State, through its compulsory education enactments, requires its youth to pursue certain studies, which experience has proved necessary to secure that efficiency. Individual efficiency, however, rests not alone on education, or intelligence, but is equally dependent on physical health and vigor, and this is an element of education to which the State should give careful consideration.

Superintendent Elson calls attention to the fact that public opinion is rising to a tardy recognition of the fact that the fundamental basis of the efficiency of the individual is a sound body, and that an educational effort that takes no cognizance of this fact, or does so inadequately, is largely wasted, and he also calls attention to many reports of the physical defects of school children, discovering a close correlation between such conditions and the retardation of pupils in their progress through the grades, and revealing some of the causes for children leaving school in large numbers at the fifth, sixth and seventh grades.

Medical inspection of schools is no longer in an experimental stage, nor is it of recent origin. In France, in 1833, school committees were charged with the duty of keeping the school houses cleaned, and it was the special duty of certain supervisors to watch after the health of little children. In England, France and Germany in 1867 a beginning was made. Hungary, Russia, Egypt, Chile, Argentine Republic and Japan all have their systems of medical inspection, while every city and town in Massachusetts and 70 cities outside of Massachusetts have in operation a more or less complete system. The

Japanese system of medical inspection extends all over the Empire and reaches the most remote rural community. Thus the Japanese department of education is able to tell how many children are in school in the Empire, how many are robust, of medium vigor, or weak; how many have defective eyesight, and what diseases are most prevalent at different ages of school life.

As the defects to be remedied are of two distinct classes—so the remedy naturally follows two distinct lines. The first is found in an inspection for communicable diseases, which will protect the community as a whole from infection. The second is an inspection which will protect the individual child from physical deterioration, and which will result in making the school contribute to the physical welfare, upon which the mental and moral development must depend. Whatever the extent of the system, and in whomsoever its management may be vested, it is essential for its success that it have the complete approval and cooperation of the Board of Education and Board of Health.

Do the hygienic conditions which obtain in our public schools demand inspection, and to what extent are they being looked after?

Sir John Gorst laments the gap between hygienic precept and hygienic practise. W. H. Allen, director of the New York Bureau of Municipal Research, when discussing the promotion of health in schools, states that of the rooms where twenty million children of the United States receive instruction in physiology and hygiene, there is reason to fear that 90% not only violate the A. B. C.'s of hygiene but even fall below the standard that many State Boards of Health set up for the housing of cattle.

Is it a matter of surprise, then, that children compelled to stare at dazzling light, glazed paper, or dizzying blackboards, or to strain, with improper focus, for a share of the meagre rays of a gas jet needed in the day time; compelled to sit in seats illy adjusted to the length of their legs, obliged to give close attention to work for periods inconsistent with the brain capacity, impoverished by lack of sufficient or proper food, and subjected to excessive hours of eye work, inferior illumination, imperfect adjustment, wrong position of the object, wrong arrangement of the hours of work and recreation, suffering from defects of general nutrition, develop what are commonly known as "School Diseases," which have destroyed many a career, prevented the development of many a fine intellect, and deprived many of the fruit of their laborious exertion and persevering industry.

Systematic medical inspection at school has now been discussed from the points of view of the State and of the public health. There remains for consideration the claim of the individual child—a claim which is seldom fully appreciated. Quite apart from the children's value as a State asset, or as a factor in the public health, there can be no doubt of the individual benefits to be derived from a system of health inspection.

For the moment, an analogy may be drawn from the case of children in primary schools. Their parents may be well-to-do, with a family doctor in constant attendance. The child's obvious needs and requirements are met; he may be, to all appearances, the picture of physical health, and as regards educational progress he may be fully up to the average level of his class. But, none the less, he is afflicted with short sight, or with astigmatism, and no one has realized the seriousness of his defect. In cases of astigmatism, from which a large number of school children suffer, neglect of this nature is particularly common. An astigmatic child frequently appears to have normal vision. He can read the blackboard at school and may sometimes be recognized as endowed with unusually sharp vision. The symptoms of his condition pass unnoticed. He suffers from headache or from aching and watering eyes with inflammation of the eyelids. These symptoms result from the unnatural strain to which the eye muscles are subjected in order to secure adequate vision. If the schools were provided with adequate medical inspection, such a case would be readily detected and the child referred to a competent oculist.

Even definite shortness of sight may pass unrecognized for many years. At school the child may have said he was unable to see the blackboard, and have been allowed to sit in front. At home his complaint is ignored. The more obvious results of his inability to see properly are ascribed to carelessness, or to innate stupidity: and it would be difficult to estimate the amount of misery that has been caused in this way to sensitive children. In primary schools there are many such children, whose slight visual and aural defects pass unrecognized until it is too late. Although not sufficient to impair their usefulness as citizens, they affect their chances and opportunities in later life, entailing, as they do, diminished alertness and power of observation.

The case is the same in respect of defective teeth. No attention is paid to the child's mouth until he complains of toothache. Even this complaint may be regarded by the more Spartan parents as a piece of affectation, and it is not until permanent injury is caused that the need for treatment is realized.

Anemia, again, has its own tale to tell. How many children—especially girls—pass through a period of ill health owing to debility and anemia, which is looked upon by their parents as a purely normal condition inevitable at the age of puberty. The doctor is not consulted except as a last resort. The languid, drowsy condition of the child may be ascribed to laziness, and the pale complexion, so far from being regarded as a symptom of ill health, is often referred to with pride by admiring relatives as especially beautiful. The child is pressed on to win a scholarship, though already suffering from general overstrain, or urged to take violent exercise, though troubled with constant breathlessness. The anemia may be an expression chiefly of (1) general debility and malnutrition; (2) circulatory changes at puberty; (3) rheumatism; or (4) tuberculosis. Each of these conditions should therefore receive careful consideration with a view to appropriate modifications in the routine of school life. Such children may or may not be materially impaired in health, but in all cases they experience unnecessary suffering.

School headaches, also, are commonly met with at primary schools. Such headaches are frequently either undetected or ignored, though they require special investigation at the hands of a school doctor—often a very difficult task. Headache may be the first sign of some acute infectious diseases or may be due to temporary conditions such as overwork or want of adequate ventilation. On the other hand, it may result from constant over-pressure or from some defect of vision. It may indicate the presence of dyspepsia or of some nervous disorder, or it may be a symptom of anemia or malnutrition. Even decaying teeth or nasal obstruction by adenoid growths may cause constant headache in the school child. Any of these conditions, and even marked mental fatigue and over-pressure, may pass unheeded. Therefore it is due to the individual that some means shall be established for the discovery of these and similar recognized conditions.

Recapitulation.

The claims of medical inspection at school, in so far as they concern the State, the public health and the individual, have now been analyzed; and the State control of a system of routine inspection has been substantially justified. Briefly to recapitulate the main points:

1. The State requires a physical census of the children for the discovery of unrecognized defects, partly with a view to the improvement of the national physique, and partly with a view to the preparation of all children for school life. It is also a national duty to arrange for the classification of children according to their mental capacities, and to adapt the educational system to the requirements of the several groups of children, in order to diminish the present economic wastage of misdirected educational efforts.

2. It is the duty of local authorities to protect the individual against communicable diseases in school, to supervise school buildings, and to secure healthy surroundings for the school child.

3. Owing to ignorance, neglect, or apathy on the part of parents, it becomes a requirement of the merest humanity to bring medical aid and special educational methods within reach of the individual child.

These aims and ideals can be attained only by the introduction of a system of routine inspection of the children by medical men interested, not only in public health, but also in education.

In the above article we have quoted freely from the following writers: Drs W. H. Allen; Cronin; Maxwell; Harrington; Gulick; Hogarth and others.

H. G. S.

Some Dangers Arising from Lack of Proper Hygienic Control of Ships Plying Inland Waters.

The annihilation of distance and the marvelous industrial and material development which have followed the introduction of steam and electricity into modern life have not been without their attendant ills. Leaving out of account the maiming and life-destroying *accidents,* mostly improperly so called,—the occupational diseases and the various somato-and psycho-pathies associated to a large degree with the throwing to the surface of the scum and froth of modern life by the churning processes which are so characteristic of it, still much disease of man is to be laid, indirectly at least, at the door of these two servants.

The rapid and incessant movement on a large scale of goods and of man, has created problems of hygiene and of preventive medicine more rapidly than they have been solved. Thus it happens, that improved methods of transportation have played a large part in the spread of certain transmissible diseases of man and other animals. The danger of modern travel from this standpoint is an ever increasing one and the sword has two edges. Typhoid fever will serve well to illustrate our text. There are innumerable instances in which this scourge has been spread by and to travelers. Passengers may not only carry this and similar diseases to other communities, but they may become infected in many ways both en route and at their destinations. Some of these methods of infection are so well recognized that it is useless to enumerate them.

It seems well, however, to point out that the dangers in these respects of inland navigation have in recent years multiplied with much greater rapidity than have the preventive measures for their control. No effective control is exercised in this country by any authority over the water supply and sewage disposal of either passenger or freight vessels. Municipal and State authorities neglect it, the federal government is not yet organized for it, marine engineers, vessel builders and owners do not plan for it, and vessel commanders and their crews, through crass ignorance and carelessness, often infringe the few and inadequate rules made by the owners for their guidance. Thus both passengers and communities on navigable inland waters are in constant danger of the waterborne diseases.

Nowhere, perhaps, is this danger more marked than on our Great Lakes. The distressing outbreak of typhoid fever among former passengers on a large and luxurious lake steamer running from Buffalo startled the country a few years ago. It will be recalled that this outbreak was traced to a polluted water supply.

A recent article by J. O. Cobb, (*Journal of the A. M. A.*, Dec. 18, 1909) of the United States Public Health and Marine Hospital Service, who has made a valuable study of this question of polluted water supplies on vessels plying inland waters, should be widely read. He points out that of the various practicable ways of getting drinking water on these vessels, the best (distillation and filling tanks from reasonably pure city water supplies) are discarded and the worst (by sea-cocks and by bailing while at anchor) are adopted. On our lake vessels, according to Cobb, drinking water is obtained practically only by means of sea-cocks. The intake is at the level of the keel, and through the same orifice water is pumped, not only for drinking purposes, but for ballast in filthy harbours and discharged as occasion arises. Through this common intake passes at times the foulest water.

On account of carelessness, the pipes to the drinking water tanks may be left open in rivers and harbors; and under forced pressure through leaky valves, grossly polluted water may, and perhaps often does, gain entrance into the water tanks. From the esthetic standpoint there is for drinking purposes little to choose between dirty river and harbor water straight or mixed with bilge water.

The tanks for drinking water are commonly of iron, and often covered with mould and scum.

A second glaring danger is to the communities taking their water from navigable inland waters. Sewage from passing and anchored vessels is often discharged near to cribs and other intakes thus polluting water supplies ashore. And so, having made our vicious circle, we keep running around it. The question of pollution of the water supplies of towns and cities by sewage from passing vessels is a very serious one. The vessels plying the small Canadian lakes are not permitted to discharge sewage into the water, but are compelled to install efficient septic tanks to contain it. These are discharged ashore under supervision.

It is clear that the careless and unscientific methods now in vogue for procuring drinking water and for sewage disposal on our vessels engaged in inland trade must be reformed. There is room here for activity on the part of the federal, state and municipal governments; vessels owners; and designers.

The simplest and a very inexpensive method for procuring a pure water supply on steamships is by condensation. The water should be stored in tanks of material not acted upon by water. Sewage and offal should not be discharged into lakes and streams but collected in septic tanks and properly disposed of. The seacock method for obtaining drinking water and the discharge of sewage into water supplies are doomed as soon as the public becomes sufficiently interested in preserving its health and life.

We venture the opinion that if a single enterprising and efficient Board of Health, if such there be, of any of the States bordering on the Great Lakes passed and enforced suitable regulations in ship-hygiene, these measures would have the support not only of the public but of the large shipping interests as well. If one State did this the others would follow. W. T. H.

Public Education and Preventable Disease.

The thirst for knowledge—amounting almost to an intellectual dipsomania—is the most valuable asset of humankind. Civilization of today is the summation of the mental evolution of the race. But the progress, wonderful as it has been, might be even greater, at least in so far as concerns the preservation of human health and energy, if the inherent bent of the mind toward the acquirement of useful facts could be broadly and properly directed.

Medicine—the art, science, profession, what you will except the mere means of gaining a livelihood—is coming more and more to realize that its ultimate objective and highest aim is not the treatment, amelioration and cure of individual cases of disease but the prevention, to as great a degree as possible, of all suffering. But among the laity ignorance, amounting in many cases to superstition, is still predominant. There has been progress, as is evidenced by the overcoming of such scourges as small-pox and cholera. Our present comparative freedom from these diseases could not have been accomplished without a certain amount of receptivity upon the part of the general public. In many cases the thing which has been received and which has produced the immunity has been the disease itself—a kind of receptivity for which the race deserves none too much credit. In other cases the decreased morbidity is due to force, to the enactment of legal restrictions—for which also too much credit cannot be given.

The chief hope for the increasing prevention of disease lies not so much in the election of representatives with sense enough to make laws which will force the populace to be saved, but rather in the diffusion of such knowledge as will make the individual wish to prevent disease. That the ignorance of the lay mind in regard to the prevention of disease is as great as it is, is partly due to the failure of proper teaching upon the part of those who alone are able to teach such matters—the members of the medical profession. And this failure rests in part upon mistaken ideas of ethics, and in part upon actual inability. The translation of medical knowledge into terms understandable by the laity is a matter of extreme difficulty, a matter requiring almost genius. The investigator, working along some single, restricted line, has trouble in stating his ideas in such a way that they may be understood by the general practitioner. And the latter likewise, unless he has talent of a particular variety, lacks the ability to put such useful knowledge as he has in such words as can be assimilated by the many with whom he comes in contact.

To a very great degree, however, the ignorance of the masses in matters of disease prevention, is due not so much to a lack of knowledge as to a lack of altruism. The human individual, even he of considerable intellectual attainments, is essentially selfish. When John Smith develops diphtheria he is concerned chiefly in his own recovery. He does not think of himself as a source of infection but as a poor mortal sadly afflicted. As soon as his subjective undesirable sensations have disappeared he is unwilling to be restrained. That he may still disseminate bacilli which might fatally infect his dearest friend is a matter of no concern—his own interests and desires are paramount. The farmer, recently recovered from typhoid, relieves himself of a triflingly uncomfortable distension of the rectum at the time and place most immediately convenient. That the water used about the dairy may thus become contaminated does not worry him. That is lack of knowledge plus selfishness born of ignorance.

One need not hope for an absolute millenium, but it is permissible to look forward to the time when the individual will appreciate that to prevent illness upon the part of himself he must expect certain things from humanity in general and must give much in return. The more essential facts relating to the workings of the body in health and to the ways in which abnormal conditions are produced belong to the public and should be disseminated in such form that the average individual may learn that in helping to prevent disease he is only protecting himself. If the average intelligence, in matters pertaining to disease, could be raised even only a few degrees it would not be necessary for private citizenship to undertake the eradication of hookworm disease. And it would not be long until the citizen would realize that it is as important a function of government to prevent human disease as to preserve the well-being of the barnyard fauna.

That the lay mind is eager to learn concerning disease seems to be evident from the large number of articles dealing with medical topics which have been appearing in the popular press. Many of these have done much good. That sensationalism has destroyed the value of a few does not negative the belief that the public is willing to be and will be educated in matters of the utmost importance. What may be done in the way of popularizing medicine is well illustrated by Woods Hutchinson's "Preventable Diseases,"[1] a little volume which is capable of much good and which undoubtedly must already have done much good because of the earlier publication of its subject matter in *The Saturday Evening Post.* In every attempt to popularize medical knowledge the aim should be to reach the individual of less than average intelligence. The almost illiterate citizen is the most dangerous and is the one who needs to be taught. To such, Hutchinson's book, charming and valuable as it is, will mean little. It has pointed out the necessity for primers. The world needs and awaits a corps of medical writers who can state the essential facts relating to preventable suffering in words of one syllable. O. T. S.

Intermittent Closing of Cerebral Arteries.

In patients with cerebral arteriosclerosis, there is not infrequently seen the condition of recurring temporary paralysis. This is presumably due to a local closing, either partial or total, of the blood-vessels of the brain effected by means of their muscular coat, and producing either impairment or complete suspension of the function of the part of the brain supplied by these vessels. Though physicians for some time have been familiar with this condition, there has been no term introduced to adequately describe it. William Russell of Edinburgh (*British Medical Journal, October 16, 1909*) suggests using the term "closing" instead of the word

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[1] Preventable Diseases, by Woods Hutchinson, M. D. Houghton Mifflin & Co., Boston and New York.

"claudication" which about eighty years ago was introduced into medical literature from veterinary medicine, where it was first used to describe recurring attacks of lameness or limping, with pain in the affected limbs, which occurred in a mare, and were due to obstruction of the arterial blood-supply when the muscles were put in vigorous action. This condition is usually seen in individuals over 40 years of age, who have thickened arteries with high blood-pressure and manifests itself by temporary aphasia, monoplegia, or hemiplegia, lasting from a few seconds to an hour or even longer. Often the attack may be characterized by nothing more than a feeling of numbness or tingling in the affected part. In Russell's case there were four attacks of hemiplegia in one month. In a case under the observation of the writer at the Dispensary of the Lakeside Hospital at the present time, the patient, who has a blood-pressure of 210 mm. Hg. and whose arteries are thickened, had before treatment with nitrites, three and four attacks daily of transient aphasia and partial loss of power in his right arm and leg. Some of these cases show temporary blindness due to spasm of the retinal artery. A temporary spasm of the arteries accounts for the transient aphasia, hemiplegia or blindness sometimes seen associated with migraine. Among the causes of sudden hemiplegia must be considered hemorrhage, embolism, thrombosis and temporary closing of the cerebral arteries. The latter can be distinguished from the other three causes by the prompt recovery of function. However, if the closing of the cerebral arteries with its attendant impairment of function occurs frequently and lasts for several minutes, there must result some permanent destruction of the nerve cells, as Dolley has shown that the function of nervous tissue is permanently impaired if its blood-supply is shut off for a period exceeding eight or ten minutes.

J. P.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Chronic Bronchitis: Beverly Robinson, in the *American Journal of the Medical Sciences* for December, states that to any one who has treated many cases of chronic bronchitis it is needless to say how unsatisfactory the treatment is. The best we are able to do in most instances is to relieve the condition somewhat; but as to cure, that seems rarely if ever to occur, at least among our hospital and dispensary patients. In these cases hygienic measures are of primary importance. Good ventilation, plenty of air and sunshine, good food and rest are essential, while clothing suitable to the season and well selected is necessary. As to medication internally the iodids are the most useful drugs we have when properly used, and without them our armamentarium in this line would be very defective. His two standbys are iodid of potassium and syrup of hydriodic acid. When there is dyspnea, even slight, or nervous irritability shown in any way, the iodid should be combined with Hoffman's anodyne. Hydriodic acid may be alternated advantageously with terpene hydrate in fairly large doses. Invariably counterirritation to the chest should be insisted upon, and kept up for many days or weeks, with occasional intermissions when the skin becomes tender. Nothing equals the compound tincture of iodin for its resolutive qualities, and the derivative effect upon the skin is all that is desirable. Internally he is opposed to the use of sedatives or anodynes, unless imperatively required. The least objectionable are the combined bromids, henbane or codein. A mercurial followed by Rochelle or Epsom salt, is useful once a week or oftener, and diminishes cough and expectoration for a time in a pronounced degree. Vapor inhalations especially of creasote are very valuable when properly used; if persisted in they are more curative than any other one thing unless change of climate and at times of habits and of occupation. The inhalations should be used with the perforated zinc inhaler, and his well known formula of equal parts of creasote, alcohol, and spirit of chloroform is unequaled. Internally creasote may also be given with the happiest effects; in small repeated doses and combined with the best whiskey and glycerin it will rarely disagree. These patients should not be housed, and judicious tonic medication is undoubtedly indicated.

Dementia Praecox: Henry S. Upson in the *Monthly Cyclopaedia and Medical Bulletin* for December calls attention to dental impaction as a cause of dementia praecox. In 58 cases examined by skiagraph, in about half, impactions were found, that is, teeth so angled against their neighbors as to be possible irritants. The patients in whom impactions were found suffered from a great variety of nervous disorders, varying from headache, habit spasm, restlessness, epilepsy, through insomnia to melancholia and dementia praecox. Dental treatment in these cases has been carried out by removal not only of the impactions, but of all irritations of teeth and jaws, as the irritation caused by impaction differs only in degree, not in kind, from that of other dental lesions. The therapeutic results have thus far been encouraging. They have been more decisive, that is, more truly and completely curative, in the severe mental disorders and in those cases in which the more marked dental lesions have been found. The best results have been attained in severe cases of manicdepressive insanity and dementia praecox. Of eight such cases seen in consultation, in whom thorough dental treatment has been carried out, including the extraction of one or more impacted teeth, six have recovered mental health, one is convalescent, and one is much improved. Of these patients, five were cases of dementia of whom four have recovered and one is convalescent. The common factor in all these cases is peripheral irritation. The causative relationship between lesion and resultant symptoms has been made especially clear by the fact that in the majority of these cases improvement, until then conspicuously absent, has begun within a week or two after the operation. Such a sequence is peculiarly convincing, and is made more rather than less so by the fact that in several instances sharp relapse has followed renewal of irritation by accident or dental interference. In several cases he has watched the development of an alveolar abscess and the simultaneous evolution of an acute psychosis, which was finally relieved by the extraction of the offending tooth. The prognosis in dementia praecox, in patients who are seen early and in whom existing irritations are thoroughly removed, is good without regard to the family history and even in the presence of severe symptoms. In the psychoses of the aged and the dementia of imbecility in childhood the problem is still to be worked out by early and careful removal of the lesions already shown to be the noxious agents in the psychoses of adolescence.

Chronic Nephritis: Victor C. Vaughn, in the *Journal A. M. A.* for November 27, considers the salt-free diet and the restriction of fluids in nephritis. Of one thing he is quite confident, that is, in withholding salts from our nephritics we are not withholding the direct cause of uremia. The best that we can hope for in the use of a salt-free diet is to protect the kidneys by decreasing, to a certain extent, their labor and thus conserving their capacity as organs of elimination. The inorganic salts, certainly the chlorids of sodium and potassium are not, singly or combined, the active and direct cause of uremia. Any inorganic salt above that needed in the process of metabolism is without benefit to the body, and increases unnecessarily the stress of work thrown on the kidneys, and, when these are already diseased, it is in accord with good sense to lighten their burden so far as can be done without danger. In uremia the poison results from a radical change in metabolism, and the active agent produced is not one of the normal constituents of the urine. He emphasizes the point that poisoning from anuria, and from uremia are two distinct things, and while the inorganic salts are the most poisonous constituents of the urine their retention in the body cannot be regarded as the cause of uremia—certainly not the direct cause. Widal in 1903 suggested that nephritic edema is due to chlorid retention, and that the proper treatment of the edema of nephritis should provide a diet that is largely salt-free. The reasoning here seems to be good, but the experience of clinicians has not been so satisfactory as the earlier reports led us to expect. Edema in nephritis is due to diverse causes, and certainly not always to salt retention. It seems to him that the greatest good is to be secured by restricting salt in the food of those patients who may be called prenephritics. We frequently meet such patients; they are men and women past the prime of life who have been unduly energetic; often of good habits, except the tendency to overwork; the heart has been unduly taxed; they get out of breath easily; occasionally they grow dizzy; blood-pressure is high; there may be a trace of albumin or none. He advises such patients to have their food prepared without salt. It seems to him only good sense to limit the consumption of fluid in nephritis as far as possible without distress to the patient.

Heart Disease: William H. Thompson in the *Medical Record* for December 4 asserts that in the treatment of cardiac conditions one of the most frequent errors arises from the common conception that digitalis is a true heart tonic. The action of digitalis on the heart is analogous to that of ergot on the uterus. Just as the effect of ergot is limited to a healthy uterus dilated by pregnancy, so that of digitalis is limited to a dilated heart without diseased walls. High tension pulse should always be regarded as a dangerous symptom, and it might be of acute onset coming on without warning, to the great danger of the patient. As to the cause of arterial tension, it is inaccurate to say that kidney disease, in itself, causes it, as in some advanced cases of kidney disease such as parenchymatous nephritis with dropsy, there might be no rise in tension. He ascribes high arterial tension to the pressure of an excessive amount of suprarenal secretion of the blood, as he found that even a very minute dose of adrenalin will raise the pulse to an uncomfortable degree in a healthy adult. He believes aconite to be one of the most valuable remedies we have in the treatment of cardiac disease, having a slowing effect on the heart, regulating its action, and at the same time acting as an arterial dilator. It is especially indicated in the presence of high arterial tension, while opium he believes to be one of our best cardiac stimulants.

Veronal: William Waugh in *Merck's Archives* for November, considers the indication for veronal in the morphin habit. This drug has been repeatedly suggested as an effective hypnotic to be used during the "withdrawal" from the morphin habit. His first use of the drug, made immediately after the morphin had been withdrawn, was unsatisfactory but in another instance gelseminin was relied upon to soothe the nervous unrest of this period for four days after the final dose of morphin had been given. He then gave the patient 10 grains of veronal at bedtime. This was followed by seven hours of refreshing sleep, without any unpleasant aftereffects. This dose was repeated for three nights, then five grains were given for three nights, and the remedy was not required subsequently. He was very favorably impressed with the veronal in this case, and believes it far more valuable than any form of bromid. This illustrates a point which he has observed before, that veronal should not be employed except for the symptom of insomnia itself, that is, if there is any obstacle to be met such as pain or other pathologic condition, this should be relieved by the appropriate treatment. If sleep does not then come, or if it is too light or broken to be restful, veronal finds its place. In a case of gastric indigestion the pain was completely relieved by the use of sodium succinate, five grains before meals and on going to bed, but the patient was unable to sleep, even when the obstacle was removed. Three five grain doses of veronal on successive nights afforded restful slumber, broke up the habit of insomnia, and no further medication was required. It is imperative in every case of insomnia, to look for, and remove its cause. When the bowels have been unloaded of their decomposing contents and all the channels of elimination are wide open, when the cerebral vasomotor conditions have been remedied, the field for the use of hypnotics has been narrowed down to an exceedingly small one. For the remaining cases it is fortunate that we have in veronal a harmless and effective hypnotic; in the first respect, markedly superior to any of the synthetic hypnotics that preceded it. There is danger that the importunities of the patient may induce the physician to give too large a dose. Five grains will often suffice, 10 grains will usually prove effective, and it is only in unusual cases that he has had to resort to the third five grain doses.

Tetanus: In the *Therapeutic Gazette* for November (from the *Annals of Surgery*) Hutchings states that he has been convinced, as the result of experiments, that chloretone is the best substance that has thus far been employed for controlling the muscular manifestations of tetanus. He has treated six cases with five recoveries: of these, one was mild, one moderate, one fulminating. In one case, following a crushed phalanx and in which the patient became steadily worse for four days in spite of antitetanic serum, morphin, chloral and bromids, the administration of 30 grains of chloretone, dissolved in half a glass of whiskey was followed in a few minutes by natural sleep, with natural relaxation. During this period the jaws could be opened to their fullest extent. This quiet sleep of five hours' duration was followed by a moderate return of convulsive symptoms, for which 20 grains of chloretone in whiskey were given: this was followed by rest and quiet for 12 hours during which the patient swallowed readily and took nourishment freely. Convalescence seemed perfectly smooth for some days when the patient died suddenly; an autopsy showed a perforation of the colon, but all the symptoms suggested a complete recovery from the tetanus. This contribution is one of great importance, as many of the successful cases reported as incident to the use of antitoxin belong to the category which recovery under any treatment. The almost absolute fatality of the short incubation cases is generally recognized, and at least two of Hutching's cases belong to the type in which the mortality is practically absolute. It is to be noted that in all cases the wound was thoroughly cleansed, and treated with peroxid of hydrogen; that in all cases full doses of antitoxin were given; and that the chloretone is apparently regarded by the reporter as serviceable not in combating the toxin but rather as a means of providing complete rest for the patient and producing a muscular relaxation which facilitates his treatment.

Pituitary Extract: In the *New York Medical Journal* for Dec. 4, U. Blair Bell considers the pituitary body, and the therapeutic uses of the infundibular extract in shock, uterine atony and intestinal paresis. He describes the result of his own experiments not only on the blood-pressure, but also upon the uterus and intestines, and in a clinical way he obtained striking results with such an extract in shock, uterine atony, and intestinal paresis. He believes it especially indicated in such conditions as postpartum hemorrhage. In the discussion Sir James Barr thought that pituitary extract should be used with caution as its misuse would bring it into disrepute. The drug is active in producing arteriosclerosis, in contracting the coronary arteries and in leading to their degeneration; when used with low blood-pressure no mischief could result, and if reserved for such cases it will hold a valuable position in therapeutics. Paul has used it in a case of intestinal paresis after operation with most remarkable results after all else had failed to give relief; the extract would be far less efficient in intestinal atony due to acute general peritonitis than in that due to other causes.

Pneumonia: In *American Medicine* for November, John L. Andrews treats of the salicylic treatment of pneumonia, giving his personal experience with certain drugs in acute lobar pneumonia. He believes that the three conditions most to be feared in this disease are high temperature, cardiac exhaustion or dilatation, and edema of the lungs, other conditions being distinctly secondary to this trinity of symptoms. Many years ago Dr A. A. Smith favored the use of salicylate of soda in the very early treatment of pneumonia, with the hope of aborting the disease. It was given with the idea that enough was absorbed by the blood and tissues to inhibit the growth of the pneumococcus. The use of this drug, however, is beset by at least two important disadvantages: first, it frequently disagrees with the stomach; and secondly, it is apt to depress the heart in the later course of the disease. Occasionally, too, the kidneys are irritated by its use. Acetylsalicylic acid, however, seldom disagrees w[illegible]mach, [illegible] [illegible]monia is very striking, about 20 or [illegible] has been taken the patient begins to perspire and this continues for from one to three hours. In some cases in which the drug is given in 10 grain doses, and four doses a day, the skin will be moist most of the time. Coincident with the skin moisture, the patient becomes less restless and generally slips off into a quiet sleep lasting for one or more hours. With the outbreak of sweating the temperature begins to fall and declines sometimes three or four degrees. With this fall the pulse rate becomes proportionately slower and the pulse distinctly improves in quality. These patients have a regular rise of temperature once or twice a day and from one to three days before defervescence. In no case has he seen any sign of heart depression from the effect of the acetylsalicylic acid, and it is exceedingly rare to find it necessary to use a heart stimulant throughout the disease, in cases uncomplicated by previous cardiac or other diseases. He does not claim that the course of pneumonia is shortened by the use of acetylsalicylic acid, although he believes that a sufficient experience will show it. All complications are not eliminated. He has had no cases of wandering pneumonia, delayed resolution, or empyema. Alcoholics have their delirium, but he has found it mild in character.

Tuberculosis: A. P. Francine in the *International Clinics* (Vol. III, Series 19) states that in tuberculosis we do not give drugs to control symptoms: first, because it is amazingly futile; second, because it is grossly illogical; and third, because it is entirely unnecessary. It is an axiom in tuberculosis that one cannot hurt patients by rest, but it is the easiest thing imaginable to exercise them into their graves. He advises in regard to rest that all patients with a temperature consistently rising above 100° should be absolutely confined to bed; exercise should be instituted only when the patient's temperature and pulse are normal or practically so, and should be slowly and systematically increased if he is not adversely affected by it. The use of tuberculin is confined largely to those physicians who are in charge of or resident in special sanatoria or to men who have had such experience. Tuberculin should not, in his judgment, be used by anyone who has not studied its administration in expert hands and who has not a thorough working knowledge of the subject both from the experimental and clinical side. Those best qualified to judge of its efficiency speak highly of its use. His feeling about the tuberculin is a somewhat non-committal or expectant one. Tuberculin is a toxin of great potency capable, no doubt, of doing good in certain cases, but also capable of doing great harm when unwisely used. He is quite optimistic about the results of the present day treatment of tuberculosis without the use of tuberculin, and believes in the strong tendency which these cases show to get absolutely well on general measures alone. This tendency to recover is seen not only in practically all cases taken reasonably early but in many of even the more advanced cases. Everyone hopes earnestly for a truly specific therapy, and not a "near" specific, and until then, let us stick to our measures of known and proved value, our triology of fresh air, good food, and rest, the greatest of which is rest.

Extract of Corpus Luteum: W. H. Morley, in the November number of the *Journal of the Michigan State Medical Society*, reports his results from the use of corpus luteum extract in 18 cases of disturbances of the artificial and physiologic menopause. This report is a continuation of the one that appeared in the August number of the *Detroit Medical Journal*. The author uses an extract made from the corpora lutea of beef ovaries rather than an extract of the entire ovary, as the consensus of opinion seems to be that the internal secretion of the ovary is produced by the yellow body. The extract is given in five grain doses, three times a day, one-half to one hour before meals. His results in 18 cases may be summed up as follows: Five were cured, 12 were improved, and one obtained no relief. Included in the 12 cases that were improved are grouped those that are still taking the extract. A permanent cure may result in a few of the cases under treatment. Of the 18 cases, 14 suffered from disturbances of operative or artificial, and four from those of natural or physiologic, menopause. While the results obtained in so small a group of cases do not warrant the drawing of any definite conclusions, still the author thinks that the results are favorable enough to justify a continuance of the treatment in other cases, in which there is a disturbance incident to artificial or physiologic menopause.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph.G., Ph.D.

Prescription Difficulties: An interesting collection of difficult prescriptions was presented at the last meeting of the Maryland Pharmaceutical Association by H. A. B. Dunning. One calling for cod liver oil, 6 fluid ounces; fluid extract cocillana, 2 fluid drachms; brown mixture, 4 fluid ounces; and whiskey, 6 fluid ounces. The oil was emulsified by use of 12 drachms acacia and the brown mixture diluted with half an ounce of water, 5½ ounces of whiskey being used instead of the six ounces called for.

Another called for an aqueous solution of the bicarbonates of sodium and potassium along with magnesium sulphate. The solution can be prepared but carbon dioxid is slowly liberated, with deposition of magnesium carbonate.

Two called for capsules containing powders that liquefy when rubbed together; the one calling for camphor and salol with other ingredients, while among the constituents of the other were salol and menthol. These were cleverly handled by putting one of the liquefying ingredients in the smallest possible capsule, putting the rest of the powders, properly divided, into conseals and dropping the filled capsule into each conseal before sealing. (*Practical Druggist, 36,* 244.)

New Adulterant of Volatile Oils: The latest sophisticating agent is the terpene, terpinolene, which according to J. C. Umney (*Chemist and Druggist,* through *Merck's Report, 18,* 299) is now rather largely obtained as by-product in making terpineol and is therefore quite cheap. About the only means of detection is by the terpineol odor left on evaporating a few drops of the suspected oil from a piece of filter paper.

Kawar Root: This drug from an undetermined plant of the Asclepias family is used in the Transvaal for cancer. According to the *Chemist and Druggist* (*75,* 480) it yields an essential oil and a glucoside, kawarin, which resembles condurangin and decomposes on heating to 188° C.

Powdered Castor Oil: Magnesia has the property of mixing with its own weight of castor oil in the form of powder that is stable, tasteless, and odorless, and is as efficient therapeutically as the same dose of pure castor oil.

The product is not a magnesia soap, as 96% to 98% of the oil can be recovered by extraction with ether (O. B. May, *Society Chemical Industry,* through *Spatula, 16,* 22).

Tincture of White Soap: F. P. Dunnington (*Old Dominion Journal of Medicine and Surgery,* Aug., 1909) cites the objections to tincture of green soap—alkalinity, odor and stickiness—and therefore recommends a tincture of white soap; viz., mix in one gallon jar, distilled water 1300 c.c.; stronger ammonia water 100 c.c.; alcohol 1400 c.c.; pour 1200 grams Conti's white castile soap, in fine shavings, into the liquids and stir at two hour intervals until practically all the soap has dissolved. Then decant the clear liquid into a suitable container. The process yields about one gallon of tincture of specific gravity 0.97—same as the tincture of green soap.

Glycerite of Iodin: A preparation consisting of iodin 20 parts; potassium iodid 20 parts; and glycerin 80 parts is suggested by F. M. Apple (*Merck's Report, 18,* 300) under the title given below. This is intended primarily for the rapid preparation of ointment of iodin, which could be made from 20 parts of the glycerite and 80 parts benzoinated lard.

Preservation of Vegetable Drugs: Perrot and Goris (*Bull. Sci. pharmacol.,* 1909 No. 7, through *American Druggist, 55,* 178) call attention to the fact that the deterioration in activity of some drugs is due to ferments which eventually produce complete decomposition of the active ingredient. Such ferments are usually destroyed by the heat of sterilization which suggests that method of preserving drugs. Experiments of the writers show that unstable drugs as kola and digitalis when sterilized in the autoclave for 10 minutes at 110° C. keep perfectly, retaining both natural color and odor.

Blood Test in Urine: The following sensitive test is suggested by Albarran and Heitz Boyer (*Gaz. Med. de Paris,* Aug., 1909, through *American Druggist, 55,* 179). Their reagent consists of 2 gm. phenolphthalein and 20 gm. potassium hydroxid dissolved in 100 c.c. boiling water, and to the solution is added 10 gm. powdered zinc. The zinc eventually decolorizes the solution and then the liquid is filtered (through asbestos?) while still boiling. In carrying out the test, 2 c.c. urine in a test-tube is mixed with 1 c.c. of the reagent and 3 to 4 drops of a 12 volume hydrogen dioxid solution is added. If blood is present a fuchsin red color results. This test is sensitive to 1 part to 100,000.

Removing Stains: The following suggestions as to removing stains from the hands are of interest: *Chrysarobin* can be removed with warm chloroform. *Resorcinol* can be removed with weak solution of citric acid. *Picric acid,* cover spots with a magma of magnesium carbonate and water and rub vigorously. *Pyrogallol,* first, touch with 10% ferrous sulphate solution, then wash with water, and remove iron stain with oxalic acid. *Tar,* use alkaline soap solution. (*Pharm. Centralhalle, 50,* 864, through *Merck's Report, 18,* 329).

Academy of Medicine of Cleveland.

Ophthalmological and Oto-Laryngological Section.

The forty-third meeting was held at the Cleveland Medical Library Friday, November 26, 1909, J. N. Lenker in the chair.

W. B. Chamberlin reported the case of a boy, aged 12, who first came to the clinic two weeks before on account of inability to breathe through his nose. Three weeks previously he had struck his nose against an iron post and at that time there was considerable bleeding but not much pain. Examination showed a tumor protruding into the nares from either side of the septum. The tumor was incised on both sides and about an ounce of pus evacuated. There was some question whether, on account of poor blood-supply, the cartilage of the septum would ulcerate and cause a deformity of the nose.

J. E. Cogan presented a girl, aged 12, whose family history, as far as could be obtained, was negative. About six weeks previously her attention was called to the fact that her right eye turned out. She then noticed that she could not see out of the right eye. A tumor was found causing a detachment of the lower portion of the retina but its exact nature could not be determined.

The program was as follows:

1. Smith Operation, Presentation of a Case, A. R. Baker (Appearing in full on page 33).

2. Vaccine Therapy in Chronic Otitis Media, with Report of Cases, P. A. Jacobs. (To appear in full in the Journal.)

3. Carcinoma of the Auricle, Report of a Case, W. B. Chamberlin. The patient, a male aged 45, presented himself at the clinic on account of pain in the ear. There was a foul discharge which he said had existed for three months. There was a cauliflower-like mass on the inferior portion of the canal but the tympanic membrane was normal. Microscopic examination of a small portion which was excised showed it to be an epithelioma.

The following officers were elected for the ensuing year: Chairman, Edward Lauder; Secretary, J. E. Cogan; Councilor, J. N. Lenker.

Medico-Pharmaceutical Section.

The second meeting was held at the Cleveland Medical Library Friday, Nov. 26, 1909, L. C. Hopp in the chair.

The program was as follows:

1. Tonics, Pharmaceutically, M. G. Tielke. The elasticity of the term tonic, in including variously acting drugs, was pointed out. The so-called bitter tonics were then discussed including the various preparations

of gentian, cinchona and calumba. The confusion existing in the mind of the physician as to the various preparations of iron, quinin and strychnin was largely due to the lack of uniformity in the strengths of the various constituents; the same objection applied to the hypophosphite preparations, the vehicle as well as the percentage composition of no two being the same.

W. G. Fox, in the discussion, pointed out the differences between the various hypophosphite preparations, especially with reference to their percentage composition.

W. F. Hankey drew attention to the various preparations of iron, quinin and strychnin and the method of preventing a precipitation when diluted with water.

C. W. Benfield dealt with the composition and preparation of the so-called stomach tonics, viz., tinctures of calumba, cinchona, gentian and cardamoms.

H. V. Arny said that the use of saccharin in some of the elixirs was under consideration by the revision committee of the pharmacopœia. The manufacturing pharmacists were opposed to its use being discontinued, while the laws of some States prohibited its use. The variable strength of the hypophosite preparations was due to the character of the menstruum; if a uniform strength were adopted it should be that of the weakest. Such uniformity would be an improvement in these, as in the preparations of iron, quinin and strychnin.

N. Rosewater said that uniformity in the strengths would be a very important and very advisable change. He saw no objection to the use of saccharin which was simply a flavor and interfered less with digestion than did sugar. There was no excuse for such a misnomer as elixir calisaya.

J. J. Thomas said that evidently the German authorities did not consider saccharin injurious to the stomach since they often advised its use in preference to milk sugar in infant feeding.

2. Tonics Pharmaco-Therapeutically, J. G. Spenzer. The term tonic in its clinical conception, had a wider application than its derivation would indicate. The main classes of tonics were mentioned and attention was drawn to the fact that, strictly speaking, many of them were not true tonics at all. From a physiologicochemical standpoint, supplying the want of some substance, normally present in the cells of the body but for some reason absent in disease, would represent true tonic treatment; but although various substances, such as oxygen, spermin, etc., had been extensively tried with this end in view, they had not given the desired results.

3. Clinical Uses of Tonics, Robert Pollock. (To appear in full in the Journal.)

F. W. Hitchings, in the discussion, said that he was often at a loss to know whether to prescribe a tonic or a sedative in a given case; sometimes one, sometimes the other gave the best results. He had been trying the formates recently but had been disappointed with them.

N. Rosewater thought that J. G. Spenzer's definition of a tonic was too narrow and based too much upon the derivation of the word. He considered a tonic to be any remedy which would restore a disordered function.

M. J. Lichty said that many abnormal conditions did not necessarily need a tonic, and that tonics should be given only after a specific diagnosis had been made. Patients were apt to suggest that they needed a tonic and were given one without sufficient investigation. A good deal of harm might result from the indiscriminate prescribing of tonics.

T. Sollman said that tonic measures were those methods of treatment which would improve the nutrition of the body and increase the powers of resistance. Tonics were different from stimulants and alteratives. The effects of formates, he thought, were principally psychical. A greater degree of simplicity and uniformity in the numerous medicinal preparations in use was highly desirable.

J. B. McGee, R. K. Updegraff and L. C. Hopp also took part in the discussion.

The following officers were reelected for the ensuing year: Chairman, L. C. Hopp; Vice-Chairman, M. J. Tielke; Secretary, J. B. McGee; Councilor, J. E. Tuckerman.

Veterinary Section.

The ninth regular meeting was held at the Cleveland Medical Library, December 2, 1909.

The program consisted of the following case reports:

Brain Lesion in a Mare, E. H. Shepard; Melanotic Tumor in a Horse, A. S. Cooley; Cerebral Tumor in a Horse, A. E. Cunningham.

The following officers were elected for the coming year: Chairman, R. C. Roucche; Secretary, L. J. Dunn; Councilor, A. S. Cooley.

Clinical and Pathological Section.

The sixty-fourth regular meeting was held at the Cleveland Medical Library, Friday, Dec. 3, 1909, W. B. Laffer in the chair.

M. Coplan reported that the specimens which he believed to be hookworm larvae, and which had been presented at the October meeting of this Section, had been sent to Dr Stiles of Washington for confirmation of the diagnosis, but his report had not been received when the paper was read. Dr Stiles had forwarded the specimens to Dr Howard of the Bureau of Entomology who pronounced them larvae of two species of fly, *Sarcophaga* or flesh fly, and *Muscina stabulans,* the common biting stable fly. The literature upon the subject was mainly foreign; but reference to two similar cases were noted in the *Journal A. M. A.* for October 23, 1909, page 1419; in one of these the larvae were found in the rectum and in the other in the vagina. He had been able to find three other cases reported besides his own. Dr Stiles had forwarded some specimens of hookworm larvae which were shown to the Section.

The program was as follows:

1. The Clinical Value of Carbon Dioxid Snow, with Demonstration of New Ice Compression Mould, W. I. LeFevre. (To appear in full in the Journal.)

M. Metzenbaum, in the discussion, said that three years ago he had spoken before this Society on the value of carbon dioxid snow in the treatment of certain lesions of the skin. His attention had first been directed to it seven years ago by a conversation with W. T. Corlett. To Dr Pusey of Chicago was due credit of demonstration to the medical profession of the value of this form of treatment.

W. G. Stern asked whether in lupus, carbon dioxid snow had any advantage over any other form of escharotic.

W. I. LeFevre in reply said that there was no doubt in his mind but that it was much superior to other escharotics.

2. Uraemia, C. F. Hoover. (To appear in full in the Journal.)

R. K. Updegraff, in the discussion, questioned the value of blood-pressure readings in cases in which, with the common form of apparatus used, the reading was high. A high reading did not necessarily mean that the pressure inside the artery was high, for William Russell of Edinburgh had shown that this might be due to a thick arterial wall.

B. E. Sager asked what the speaker would advise in the way of treatment in a case of uremia.

C. F. Hoover in reply said that Russell, in his book, had given no adequate proof of his statement that the thickness of the arterial wall played an important part in blood-pressure readings. He had nothing new to offer in the way of treatment, but elimination by the skin and bowels should be promoted as far as possible.

3. Hemorrhagic Varicella with Report of a Case, R. W. Elliott. (Appearing in full on page 37.)

The following officers were elected for the ensuing year: Chairman, J. S. Tierney; Vice-Chairman, W. C. Stoner; Secretary, H. B. Ormsby; Councilor, S. L. Bernstein.

Experimental Medicine Section.

The forty-seventh regular meeting was held at the Cleveland Medical Library Friday, December 10, 1909, G. W. Crile in the chair.

The program was as follows:

1. Practical Observations on Acute Anemia, G. W. Crile. (To appear in full in the Journal.)

2. Remarks on the Occurrence of Thyroid Hyperplasia (Goiter) in Fish, D. Marine and C. H. Lenhart. Certain observations upon, and the results of experiments with thyroid hyperplasia in fish were reported. They had found that in certain Lake Erie fish, particularly the lake pike and bass, there occurred certain changes in the thyroid similar to those seen in the higher animals of the adjacent country. They also reported experiments made with the lake pike showing that these thyroid hyperplasias in fish reacted with iodin in the same manner as did the hyperplasias of the mammalian thyroid. These thyroid changes (hyperplasias) were found more frequently in the carnivorous than in the herbivorous fish, as was also true for the higher animals. In conclusion, they stated that from the vast literature associating water with the cause of goiter, the finding of goitrous thyroid changes in fish was perhaps the most direct evidence that water might contain the causal factor or factors of endemic goiter.

3. Some Modern Aspects of Experimental Diabetes, J. J. R. MacLeod. (To appear in full in the Journal.)

B. E. Sager in the discussion said that since the pancreas, rather than the liver, was the organ usually affected in diabetes, there would seem to be some basis for the treatment of this disease with trypsin. A number of cases had been reported in which marked amelioration of the symptoms had followed the trypsin treatment and he wished to ask how this action could be explained.

J. J. R. MacLeod, in reply, said that trypsin, an external secretion of the pancreas, has nothing to do with the disturbances of metabolism causing diabetes. This was shown by certain experiments of Minkowski by which the secretion of pancreatic juice into the intestine was prevented or in which the secreting acini of the pancreas were destroyed: in neither of these cases did diabetes develop. He thought that the favorable results of the trypsin treatment of diabetes had been exaggerated by the manufacturers of such preparations.

The following officers were elected for the ensuing year: Chairman, C. F. Hoover; Vice-Chairman, C. H. Lenhart; Secretary, H. D. Haskins; Councilor, T. Sollman.

Academy Meeting.

The seventy-first regular meeting, being the annual meeting, of the Academy was held at the Cleveland Medical Library, Friday, December 17, 1909, the President, W. E. Lower, in the chair.

The annual reports of the officers and committees were presented and were, in part, as follows:

Report of the Secretary:

During the year the Academy held nine meetings, eight of which were addressed by eminent men from other cities, viz., J. Whitridge Williams, Baltimore; M. P. Ravenel, University of Wisconsin; A. J. Ochsner, Chicago; Frederick Forchheimer, Cincinnati; Richard Cabot, Boston; Wharton Sinkler, Philadelphia; Samuel G. Gant, New York; J. W. Kerr, Washington.

Twenty papers were presented at Academy meetings, six on subjects pertaining to general medicine, 10 on surgical topics, four on economics, ethics and sociological subjects.

There had been a decided increase in the average attendance of the Academy meetings. The largest attendance at any one meeting was 260, the smallest 75. The average being 166.6, a gain of 35.6 per meeting. This might be interpreted as a substantial endorsement of the work of the Program Committee.

The growth in the membership of the Academy had been most conspicuous, its influence had extended to other allied professions and their Sections should have a vote in the Council of the Academy. A comparison between the years 1908 and 1909 was as follows:

	1908	1909
Active members	516	522
Non-resident members	125	129
Associate members	20	82
Honorary members	5	10
	666	743
Losses:		
Resigned	9	13
Deaths	1	3
Suspensions (annual meeting)	0	0

There were, however, 11 suspensions early in the year which if included in the totals, showed a gross gain in membership of 104, net gain 77. There were 30 delinquents at this time which compared favorably with last year.

The Academy was to be congratulated in that it continued to be recognized as a model organization. The Secretary had received many inquiries regarding its plan of organization, rules of procedure, etc., from other cities. Copies of the constitution and by-laws had been sent to other societies to aid in their reorganization.

As the local member of the State Committee on Public Policy and Legislation, the Secretary had given considerable time to legislation. Four trips to Columbus were made to meet with the State Legislative Committee for the consideration of matters of interest to the profession. The work of the State Committee had deprived the local Legislative Committee of almost all of the work usually referred to it.

In the last session the Legislature passed but one bill that was of interest locally, viz., The Medical Inspection of Public Schools Bill. During the year the bill providing for county hospitals was declared unconstitutional. For the coming regular session of the State Legislature the following bills had been endorsed for consideration: A substitute County Hospital Bill, a Medicine Venders Bill, Criminal Abortion Bill which provided for the immunity of victims testifying, that is, the acceptance of antemortem testimony. A County Health Officer Bill which provided for 12 inspectors with deputies. A bill forbidding the advertisement of cures of venereal diseases, and a bill providing for the sterilization of criminals and defectives.

The Council for the year consisted of: The President, W. E. Lower, Vice-President H. D. Ormsby, Secretary C. E. Ford, Treasurer W. S. Hobson, J. B. McGee, H. W. Rogers, A. J. Skeel, J. J. Thomas, J. G. Spenzer, C. C. Gentsch, J. M. Ingersoll (resigned), W. B. Laffer, Torald Sollman, C. F. Hoover, J. E. Cogan, R. G. Perkins, John Dickenson, H. J. Gerstenberger, R. E. Skeel, T. A. Burke, L. W. Ladd, J. E. Tuckerman, J. N. Lenker.

Among the more important transactions and committees of the Council were the following:

A committee to aid Dr F. A. Stovering.

A committee to investigate and report on the Emanuel Movement.

A committee to investigate the status of midwifery in Ohio, with especial reference to Cuyahoga County.

The Council as a committee of the whole to discuss illegal practise with County Prosecutor Cline.

A committee to negotiate with the Cleveland Medical Journal Company.

A committee to investigate the work of the State Commission for the Blind.

Consideration by the Council of Medical Inspection in Public Schools.

A request for the resignation of members of the Council who failed to discharge their duties.

Provision for relighting the Library assembly room.

Consideration of and action upon the method of calling expert medical witnesses for court testimony.

The authorization of the payment of 75c per member per year to the Cleveland Medical Journal Company.

Authorizing a joint meeting of the Toledo Academy of Medicine and the Academy of Medicine of Cleveland.

Consideration of the relation of the profession with the lay press. A committee appointed which had thus far failed to report.

Consideration of antivivisection in Ohio.

Resolution approving of the construction of a Tuberculosis Hospital.

Approval of an assessment of 50c per capita upon members by the Ohio State Medical Association.

Formation of the Medico-Pharmaceutical Section.

Action which brought about the reseating of the Library assembly room.

Approval of the existing ordinance restricting the sale of fireworks.

The Council recorded itself as being favorable to a dog muzzling ordinance looking to the suppression of rabies.

An investigation of three cases of unethical conduct on the part of members.

Authorizing the payment of $100 per year for the employment of the Assistant Secretary.

A committee to cooperate with Mayor-Elect Baehr in the selection of medical officers for the incoming administration.

Cooperation with the State Board of Pharmacy against the sale of cocain substitutes.

The passage of a resolution looking to a broad reorganization of the Municipal Health Department.

The Academy had cooperated with the Sociological Department of Western Reserve University in presenting a series of lectures on popular sociologic subjects.

The standing committees of the Academy were:

Public Health Committee: Roger Perkins, Chairman, H. E. Handerson, L. W. Ladd, E. O. Houck, E. D. Schaffter, V. S.

Membership Committee: John Dickenson, Chairman, A. F. Romig, N. S. Banker, C. E. Pitkin, C. H. Lenhart, E. O. Houck, W. E. Schlesinger.

Program Committee: H. J. Gerstenberger, Chairman, C. E. Ford, H. D. Haskins, John Phillips, H. H. Drysdale, Irving Ludlow, G. I. Bauman.

Legislative Committee: R. E. Skeel, Chairman, W. E. Shackleton, J. F. Hobson, Charles Gentsch, C. E. Ford.

These committees put forth their best efforts and their members could view their labor with pride.

During the year 26,775 notices and communications were mailed from the office of the Secretary.

In conclusion the Secretary expressed his appreciation of the services of Miss Irene Norris as Assistant Secretary.

Report of the Treasurer:

Balance on hand from 1908	$ 627 62
Total receipts (dues)	2,178 50
Interest (savings account)	16 66
	$2,806 12
Total disbursements	2,537 13
Balance on hand	$ 268 99

The report of the Auditing Committee showed that the Treasurer's report was correct.

Reports of the Councilors of the various Sections (condensed):

	Clinical and Path.	Experimental Medicine	Ophth. and Oto-Lar.	Medico-Legal	Medico-Pharmaceutical	Veterinary
Meetings	9	6	6	3	2	9
Total attendance	670	492	82	404	72	108
Average attendance	74	82	13	134	36	12
Papers read	30	12	8	12	7	...

The reports of the various standing committees were incorporated in the report of the Secretary.

The report of the Milk Commission was as follows:

"In reporting the progress that has been made by this Commission since the last report a year ago, several factors affecting our technic may be taken into account. 1. A new dairy house, with much improved sterilizing facilities. 2. A new milk cooler for aerating and chilling the milk, double the size and therefore twice as effective as the old one. 3. The practical elimination of flies, due to the situation of the milk house (200 yards from the nearest barn), a larger and better arranged bottling room and efficient screening.

"As a result of these improvements the average bacterial counts have been materially reduced as compared with the average counts of one year ago and the occasional moderately high count that formerly was obtained has been observed but once in 18 months, although for several months the counts have been made every two weeks instead of once a month. When the Commission was first formed a maximum standard of 30,000 bacteria per c.c. was adopted as the highest permissible bacterial content. Later it was found possible to reduce this figure to 10,000. During the past year the highest count showed 8,577, the lowest 500 while the average was 3,443.

"The chemical analyses have been made about once in three or four months during the past year and have always revealed a milk within the requirements of the commission.

"The Veterinarian's monthly reports likewise have been uniformly satisfactory.

"Several of the employees were examined during the year by the Assistant Secretary, all of whom presented minor ailments except one seen recently who was immediately removed from the proximity of the milk and a few days later dismissed.

"In spite of the improved conditions noted above, resulting in better technic and lowered bacterial counts, the producer has not been without his trials and set backs. At the last annual tuberculin test which was made about nine months ago 10% of the entire herd reacted positively, necessitating the immediate withdrawal of the reacting animals and the institution of stringent methods to adequately disinfect and sterilize the barns; all of which was done under the immediate supervision of our Veterinarian. The importance of the tuberculin test, as well as the necessity of retesting a herd from time to time, will be appreciated when it is realized that these cows had successfully passed the test one year before, and no evidence of the disease could be detected by the ordinary physical examinations as made by Dr Burrows subsequently on the reacting animals. It should be borne in mind that a negative tuberculin test does not necessarily exclude tuberculosis as the cow may be still in the non-sensative stage, due to the previous test if made within a period of six weeks, or she may not react because the infection is a very recent one. The tuberculin used may not be reliable or the disease may have progressed to an advanced stage. The loss of these cows and the cost of disinfection was followed by still greater expenses when the unusually mild winter rendered it impossible to secure ice thick enough to cut (the first time that this has occurred in Cleveland in 60 years), requiring the purchasing and hauling of ice for the entire year. These extra and unforeseen expenses amounting to or over $2000.00 obliged the producer to raise the price of certified milk from 16 to 18c per quart. Due notice of this action on his part was given the Commission.

"The Secretary and Assistant Secretary were delegated to represent the Commission at the third annual meeting of the Medical Milk Commissions held in Atlantic City, June 7, 1909. Reports from about 40 Commissions were heard representing nearly every State in the Union as well as one from Canada. The interest in clean milk of the standard of certified milk is spreading rapidly all over this country if one may judge from the increase in the number of Certified Milk Commissions. One year ago last June there were only 24 organized Commissions, at the last meeting 58 Commissions were heard from. Canada has followed our lead and now has two Commissions in one of her principal cities, thus the interest in certified milk bids fair to become before many years a world-wide movement.

"Within a few weeks the Commission has been informed that Canfield's Certified Milk of Cleveland took the gold medal at the National Dairy Show held at Milwaukee. There were 12 entries in this grade of milk, representing 10 States. The points considered in scoring the milk were: 1, flavor; 2, composition; 3, bacterial content; and 4, appearance of package. Our percentage was 95, the next nearest competitor received 92 and the lowest 62¼."

The following communication from the directors of the Cleveland Medical Journal Company was read by E. F. Cushing, President of the Company:

"Mr. President and Members of the Academy:

"As the Cleveland Medical Journal is the official organ of the Academy of Medicine it seems fitting that a brief report of the situation and prospects of the Journal and its progress during the year past should be submitted at this meeting.

"In January 1909 the Journal stockholders faced a deficit of $1200.00 and the desirability of winding up its affairs and ending its existence was seriously considered. It was decided, however, to continue the Journal on the ground of its present and future value in helping to maintain a high medical standard of endeavor and accomplishment in this community; and the debt was paid by contributions and by the sale of available stock to certain members of the profession who stood ready to help in the emergency. The appointment of a business manager relieved the editor, Dr Weir, of arduous duties previously borne by himself alone and has enabled him to devote much more effort to editorial functions of themselves sufficiently time-consuming.

"Those who have read and observed the Journal will, it is believed, readily grant that in its size and general appearance, in its editorials and book reviews, in the papers published and in the reports of the Academy proceedings there has been definite improvement during the twelvemonth. If, however, the Journal is to worthily represent Cleveland Medicine and become one of the important medical publications of the land, the interest, loyalty and cooperation of the entire profession must be secured to attain this goal.

"To this end the directors of the Journal wish to appeal to the members of the Academy, individually and as a body, to interest and concern themselves in the success of the Journal which is their official organ and thereby a valuable asset and a standard by which the efficiency of this organization in and out of Cleveland can best be measured.

"The directors of the Cleveland Medical Journal with the approval of the stockholders have voted to exclude from its advertising columns, with the expiration of present contracts, all medical advertisements not approved by the Council on Pharmacy and Chemistry of the A. M. A. It is believed that this action will meet with the hearty approval of the profession. Although the Journal will at the close of the current year be free from debt this advertising policy involves the sacrifice of some $1000.00 of income which must be secured in other fashion. The Journal is sent to all members of the Academy in accordance with the terms of the existing contract between Journal and Academy but the financial budget of this body permits the payment to the Journal of but a fraction of its subscription price. Therefore the Journal directors wish to request of the individual members of the Academy that they additionally contribute to the support of the Journal by paying in person the $2.00 subscription price and giving the name and address of some physician out of town to whom the Journal thus subscribed for may be sent, thereby, besides giving needed financial aid, increasing the circulation and the circle of readers of the Journal outside Cleveland and spreading abroad the repute of the Academy through its official organ, the Journal."

The election of officers for 1910 resulted as follows: President, Chas. B. Parker; Vice-President, F. C. Taylor; Secretary, O. A. Weber; Treasurer, W. S. Hobson; Trustees, J. J. R. MacLeod and M. J. Lichty.

The proposed amendment to the by-laws, raising the annual dues from $4.00 to $5.00, failed to receive the necessary two-thirds vote. It was voted, however, that this amendment be reconsidered at the January meeting.

The address of the retiring President, W. E. Lower, was then presented.

The program was as follows:

Landmarks in the Oldest Profession, J. J. Walsh, Dean of Fordham University Medical College, New York.

Council Meetings.

The Council met Monday, November 22, 1909. The proceedings were, in part, as follows:

The following new members were elected: To active membership: R. H. Bishop, E. R. Brooks and B. B. Colvin. To associate membership: James Griswold and James T. Harding, attorneys.

The names of the following applicants were ordered published: For active membership, Gordan N. Morrill. For associate membership, Axel A. Sparre, masseur.

It was voted that the secretary be instructed to investigate and report as to the advisability of obtaining incorporation papers, according to the laws of Ohio, for the Academy.

The following resolution was adopted:

"Whereas, The Ohio Commission for the Blind has entered upon a campaign for the prevention of infantile blindness and has engaged the interest of medical men in this work, therefore be it

"Resolved, That the Medical Society of Cuyahoga County, the Academy of Medicine of Cleveland, heartily endorses the work of the commission, pledges its cooperation, and will respectfully urge upon the attention of the General Assembly the meritorious character of the work, its economic as well as humanitarian value, and the advisability of liberally supporting the movement throughout a number of years."

The following resolution was adopted:

"Whereas, a new preparation has been introduced to the medical profession, called "alypin," as a local anesthetic and substitute for cocain, and

"Whereas, certain persons are taking advantage of this and substituting alypin for cocain and selling the same to cocain habitues, thus attempting to avoid the penalty attached to the unlawful sale of cocain;

"Therefore, be it resolved, That in our opinion, for the protection of the public, the same restrictions which now govern the use and sale of cocain should also govern the use and sale of alypin, and of all other synthetic local anesthetics."

It was voted that the Medicolegal Section of the Academy be permitted to hold their meeting Thursday, January 27, instead of Friday, January 28.

An informal report of the committee appointed to interview Mayor-Elect Baehr as to appointments affecting medical interests was received. The mayor expressed his desire to have suggestions from the Academy of Medicine.

It was voted that "It is the sense of the Council of the Academy of Medicine that, 1. The incoming city government should not appoint a Board of Health, but should place the Health Department under the Director of Public Safety (or Public Service). 2. The Chief Health Officer should be a well and broadly trained medical man, to whom should be delegated the largest possible powers permitted under the statutes. 3. The Health Department should employ, when available, an expert hygienist to act as consultant to the Chief Health Officer."

The committee was discharged.

It was voted that a committee of five be appointed, including the members who previously conferred with the mayor-elect, this committee to select a list of men to be appointed to medical positions under the incoming administration, such list to be submitted to the council for amendment, or other action, before being submitted to the mayor-elect. The chair appointed W. B. Laffer, G. W. Crile, J. B. McGee, C. F Hoover and J. J. Thomas to act on this committee.

The Council met Thursday, December 2, 1909. The proceedings were in part as follows:

The name of the following applicant for active membership was ordered published: Thomas E. Griffith.

The report of the committee to present names to Mayor-Elect Baehr was received and accepted. It was voted that the Council recommend, without preference, to Mayor-Elect Baehr the following as applicants for the position of Health Officer: C. E. Ford, L. W. Childs and R. K. Updegraff.

The Council authorized its committee to recommend the retention of T. S. McAfee as Superintendent of the City Hospital, E. R. Brooks for the Warrensville Farm, and W. T. Howard, Jr., City Bacteriologist.

G. W. Crile read the following communication:

"The Department of Health is one of the most important in the city government. Its efforts should be directed actively towards the reduction of mortality and the incidence of communicable and other diseases to a minimum, to the collection and critical study of correct vital statistics, and to research into the causes and modes of spread of various diseases.

"An efficient Health Department organized and run according to modern scientific and business principles would save annually many lives and large sums of money to this community. It would be a monument to an administration and a source of pride and interest to civic organizations, the medical profession, and to the general public.

"That Cleveland is educated to this and demands it, is evidenced by the active interest shown, and the good work done in public health by such organizations as the Chamber of Commerce, the Chamber of Industry, the Academy of Medicine, the Visiting Nurses' Association, the Anti-Tuberculosis League, the United Trades and Labor Council and others.

"The evolution of Departments of Health is away from cumbersome, lay and mixed Boards of Health (the last one in Cleveland was worse than a failure, until the Board officially delegated its powers and responsibilities to a single member, when important reforms were instituted) and towards a single broadly-trained, energetic medical man as head, a variously styled Director, Commissioner or Health Officer, with broad powers and full responsibility.

"If it is possible under existing laws, the Department of Health of Cleveland should be organized under such a head, who should be responsible to the Mayor, through the Director of Safety. If, as seems to be the case, this is not now possible under the present law, until the necessary legislation can be secured the department should be placed under a Board of Health which should be as small as possible and composed of men of the highest character, intelligence and aptitude. It should delegate all possible powers to the Health Officer and give him full opportunity. It is impossible to organize and to administer a Department of Health properly if partisan politics is allowed to enter and to exert even a remote influence. The honesty, fitness and capacity of the head, as well as of sub-head and subordinate must be above suspicion and each employee must feel assured that he is appointed to and kept in office solely to do his duty and that he is secured from the threats of law breakers with political or other influence.

"Efficient and capable, scientifically trained heads of sub-departments cannot be expected to retain office and to carry out plans of improvement if their subordinates are not chosen and retained for efficiency. Nor will the public-spirited bodies with which such men are connected lend their moral support and continue to give counsel to a department otherwise conducted. There is no other department of the city government whose good and bad points are so well understood by these bodies.

"A Department of Health without these standards is practically useless, and must be held as evidence of either criminal ignorance or neglect on the part of a municipal administration.

"The Department of Health should be organized with the following sub-divisions:

"I. Head of the Department.
    (a) Health Officer.
II. Subdivision A. Health Office and Administration.
    (a) Assistant health officer; (1) Chief and other clerks; (2) District physicians and school inspectors; (3) Sanitary patrolmen; (4) Visiting nurses; (5) Plumbing inspectors.
III Subdivision B. Inspectors of Meats, Milk and other Foods.
    (a) Chief inspector in charge. (1) Assistant inspectors, veterinary and lay.
IV Subdivision C.
    (a) Assistant city chemist, working in the laboratory of the city chemist, an acting chemist to the health department.
V Subdivision D. Laboratory of Bacteriology and Pathology.
    (a) Director, to give such part of his time as may be necessary to direct and supervise the work. (1) One Assistant for the diagnosis of diphtheria, tuberculosis, typhoid fever, rabies and material from Subdivision B; (2) One Assistant for the examination of water, milk, etc.; (3) One Research Assistant.
VI Subdivision E. Consultant Hygienist.

Duties of the Health Officer and of the Various Subdivisions.

"These are for the most part correctly and amply set forth in the Sanitary Code which was formulated and written by the Committee on

Municipal Sanitation of the Chamber of Commerce after an exhaustive study of the subject.

"*Health Officer.* Besides the duties and powers set forth in the Sanitary Code, the Chief Health Officer should be given the fullest latitude and powers permissible under the statutes and should be held responsible for the proper and efficient working of the whole department, whose activities he should supervise. His time and energy should be devoted to supervising, correlating and improving the efficiency of the department, rather than be lost in detailed office work. To this end he should be provided with a suitable library and he should attend the meetings of State and national sections of municipal hygiene and sanitation.

"*Subdivision A. Health Office and Administration.* This should be in the immediate charge of a specially trained Assistant Health Officer. He should be a recent graduate in medicine and a young man of energy and promise. He should be under the direction of the Health Officer; supervise the administrative work of the office force; supervise, train and direct the work of the district physicians and school inspectors, the sanitary patrolmen and visiting nurses; receive and act upon reports and assist, by inspection and other means, in the correlation of the work of the various subdivisions.

"The efficiency of this sub-division can be greatly improved by a man of the proper type, by reorganization of the office force, redistribution of the work, and in many instances, as among the district physicians and sanitary patrolmen, by changes in the personnel. While some of these officers are of a high type, a large proportion are not. The whole sanitary police force needs reorganization, discipline and training.

"*Division B. Inspection of Dairies, Dairy Products, Meats and other Foods.* With perhaps a few changes, this important subdivision should be left as it is. It is the most efficient division of the present Health Department and, according to opinions expressed by U. S. government officials and others capable of judging, is superior to any similar service in this country. The Chief of the Sub-division, in particular, the Assistant Veterinary Inspectors and many of the other assistants are most efficient.

The results of its work, should, however, through the Health Officer, be more intimately correlated, with the other subdivisions.

"*Subdivision C. Chemistry.* The chemical work of the department is sufficient to demand the full time of a chemist well trained in the chemical analysis of water, milk, and other dairy products, foods, and food preservatives, and in certain aspects of biological chemistry.

"*Subdivision D. Bacteriology and Pathology.* This important subdivision is undermanned. Its activities should be extended and better correlated with the other subdivisions. In addition to the work and diagnosis of diphtheria, typhoid fever, tuberculosis, rabies, etc., and the analysis of water and milk it should be given an opportunity to undertake research into the causes of certain diseases, the investigations of epidemics, etc., as well as to carry on more extensively studies in water and milk and in the diagnosis of certain infectious diseases.

"*Subdivision E. Consulting Hygienist.* As it is not possible to secure as head of the Health Department a well trained investigating expert in hygiene and preventive medicine, the Department should avail itself of the services of such a man as consultant and general expert adviser in hygiene and preventive medicine. The literature of this branch of medical science is so large, so rapidly growing, so scattered in many foreign and domestic journals and much of it is so technical, that it is not practicable for even a well trained medical executive Health Officer to keep abreast of it. No one but an active investigator in this branch can be familiar with it. Such an adviser to the Department is absolutely necessary if pace is to be kept with the rapid advances of the science of municipal sanitation. It should be the duty of the Consulting Hygienist to advise the Health Officer and Heads of the various sub-divisions in questions of administration, classification, inspection, and investigation, as well as to inform these officials of all important advances and discoveries in hygiene and municipal sanitation.

"Certain other departments of the city government are in such close touch with the Department of Health, that they must be considered with it and work in harmony with it, if good results are to be obtained. The three most important of these are, the City Hospital, the Warrensville Farm and the Building Department.

"*The City Hospital.* This concerns the Department of Health because to it are sent many of the indigent and less well-to-do suffering with typhoid fever, pneumonia, meningitis, syphilis, gonorrhea, diphtheria, scarlet fever, measles and advanced tuberculosis.

"Until the last two years, for many years the City Hospital has been a scandal to the city. Under the present superintendent it is well organized and directly and efficiently run, so far as the means at hand allow.

"To permit its reduction from its present high plane by placing it in charge of any but a trained and tried hospital superintendent would not only be a disgrace to the city but would inevitably result in suffering and death to many future patients.

"*Warrensville Farm.* The institutions here that touch the Department of Health are the Tuberculosis Sanitarium for incipient cases and the proposed Tuberculosis Hospital for advanced cases which are of such importance in the fight against tuberculosis and the Smallpox Hospital which may be needed at any time, unless vaccination is pushed much more effectively than at present.

"Therefore, it is of great importance to the Department of Health that these institutions be under the charge of a director or superintendent of broad views and of great efficiency.

"*Building Department.* The important relation between health and the proper construction, lighting, ventilation and plumbing, etc., of public and private buildings is so clearly demonstrated and so widely acknowledged that comment upon them is unnecessary. The work of the two departments touch at many points, and efficient work on the part of the Building Department will solve many of the problems of the Department of Health."

It was voted that the Council of the Academy of Medicine endorse the foregoing communication.

It was voted that the committe request Mayor-Elect Baehr's permission to recommend nominees for membership on the Board of Health to be, and report to the Council.

Cleveland Medical Library Association.

The annual meeting was held at the Library on Monday evening, December 13, 1909. The reports of the officers and chairmen of committees showed that the organization has had a year of healthy growth.

There has been a slight gain in membership. The report of the Treasurer showed that the total receipts for the year were $5,424.34, total expenditures, $5,051.85, leaving a surplus of $372.49. These unusually large receipts and expenditures were due to the fact that from special contributions during the year, the auditorium was equipped with new chairs, and a new and satisfactory heating plant was installed, adequate to take care of both library buildings.

A committee consisting of C. B. Parker, W. H. Humiston and H. F. Staples was appointed to draw up resolutions on the deaths of the late A. H. Marvin and D. H. Beckwith, the latter for many years Vice-President of the Association.

A gift of $500.00 for the purchase of new books was announced from D. P. Allen.

According to the report of the Directing Librarian, the Library now contains about 16,000 volumes, an increase of 604 since the last annual meeting, besides about 8,000 pamphlets, dissertations and theses. The Library subscribes for 82 American and Foreign Journals.

The election of officers resulted as follows: President, H. G. Sherman; Vice-President, J. F. Hobson; Secretary, H. L. Sanford; Treasurer, W. E. Bruner; Directing Librarian, C. A. Hamann; Trustees to serve for three years, D. P. Allen, H. E. Handerson, W. H. Humiston, A. W. Lueke, W. E. Lower, C. B. Parker, H. W. Rogers, J. P. Sawyer, F. C. Taylor and J. C. Wood.

Book Reviews.

The Principles of Pathology, by J. George Adami, M. A., M. D., LL. D., F. R. S. Professor of Pathology in McGill University, and Pathologist to the Royal Victoria Hospital, Montreal, etc., and Albert G. Nicholls, M. A., M. D., D. Sc., F. R. S. (Can.) Assistant Professor of Pathology and Lecturer in Clinical Medicine in McGill University, etc. Vol. II. Systematic Pathology. With 310 engravings and 15 plates. Lea & Febiger. Philadelphia.

One must agree with the authors that in a textbook dealing with systematic or special pathology "it becomes unnecessary to describe in detail the different conditions that affect the different organs." The treatment must be condensed, often a mere statement of changes which may occur in any given organ suffices. There is not, therefore, the necessity or the occasion for the originality of viewpoint and of expression that made the first volume so unique. The same breadth of knowledge of both facts and literature is apparent, however, in the chapters relating to the blood and the cardiovascular system and to the kidneys. The task set, an adequate presentation of functional pathology as well as of pathological anatomy, is constantly borne in mind and is well accomplished. The book, while too large for an everyday class manual, will be of great value to those students who wish more than a mere "passing" knowledge of pathology and to those practitioners who desire to correlate symptoms and structural alterations. Extremely important, from the latter standpoint, are the recapitulations of the physiologic data underlying normal function and of the interrelation of changes in function and in structure. The student will be helped by the summarizations, amounting almost to categorical tabulations, of the results of alterations in function and structure, and his use of the volume will be greatly facilitated by the liberal and judicious use of bold type and italics.

For these more striking points, as well as for the excellence of paper, typography and binding, the volume deserves the most fulsome praise. But it is one of the established canons of book-reviewing, handed down probably from the time of the Babylonian bricklayer who must have been among the first to view writing with a critical eye, that no book should be dismissed laden with praise alone. *Ergo,* and lest he be considered too complete an amateur, the reviewer has a few minor faults to find.

Among these is one which causes some slight pain to the properly trained mind, one which is present not only in this book but in practically every American pathology written, namely, the constant use of the article "the" before specific zoological and botanical names. Throughout the volume, while there is uniformity in this habit, there is at the same time a considerable lack of uniformity otherwise in the use of such terms. Why species names should be italicized in some cases and not in others, why such names should in most cases be begun properly with a capital and in the case of "oidium albicans" (page 384) with a small letter is not apparent.

While there is no fault to find with the briefness of the discussion of amebic dysentery (page 434) it would take but a few words more to correct the statement that this disease is due to "the Amoeba coli," a species whose non-pathogenicity has been conclusively enough proved. In the statement that "Amoebic dysentery is a form confined almost exclusively to the tropics," the authors disagree with their predecessor, Osler. The reference to Fig. 15 (page 119) should be changed to Fig. 16.

The illustrations, while numerous and well chosen, are rather poorly executed. It is unfortunate that a high protective tariff should not be so successful in developing art in this country as it is in up-building the combinations which control the more necessary things of life. O. T. S.

Medical Gynecology. By S. Wyllis Bandler, M. D., Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital. Second Revised Edition. Octavo of 702 pages, with 150 original illustrations. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, $5.00 net; Half Morocco, $6.50 net.

There is but little to be said of this new edition of Bandler aside from commendation. It is strictly a medical work and should be of great value in emphasizing the medical aspect of gynecology or perhaps more correctly, in laying stress upon the medical treatment of the patient who has gynecologic disease, and in pointing out the dependence of gynecologic symptoms upon general conditions in many instances.

Scientifically, the inclusion of a large number of disorders under symptomatic headings such as amenorrhea, leucorrhea, etc., is open to criticism, but practically patients apply for relief from these symptoms, and such an arrangement is undoubtedly of assistance to the general practitioner without special gynecologic training.

The most serious fault that may be found is the repetition involved by this symptomatic classification to be followed later in the work by more elaborate treatment under the disease headings, so that many subjects are practically duplicated and the book thus made larger than necessary. Considerable attention has been given to physical methods of treatment, the use of baths, massage, etc., and these articles together with the chapter on Associated Nervous Conditions in Gynecology might be perused with profit by many gynecologic specialists. On the whole it is a very safe practical presentation of the subject. R. E. S.

Diseases of Infants and Children. By Henry Dwight Chapin, A. M., M. D., and Godfrey Roger Pisek, M. D. With 179 illustrations and 11 colored plates. Wm. Wood & Co., New York. Price, $4.50 net.

The authors in producing this volume have endeavored to follow a middle course between the compendium and "a too exhaustive work, which, by dwelling overmuch on theory and exceptions, tends to confuse." Their desire was to compress pediatrics into as compact a form as was "consistent with a thorough presentation of the subject," but the result is not at all convincing, as much of very vital importance has been treated superficially and thoroughness sacrificed to brevity.

The chapters upon infant feeding seem especially confusing and unsatisfactory and in the hands of a student would give a very unsatisfactory impression of this field in pediatrics. The best and most scientific method of calorimetric standards in feeding, although "at first seemingly simple and interesting," are designated as based upon incorrect principles, and dismissed with little consideration. This attitude is fatal to a just, broadminded and "thorough" exposition of the subject. The book is attractively illustrated but seems too brief and shallow to be of much service as anything but a compendium. H. H.

Practical Points in the Use of X-Ray and High-Frequency Currents. By Aspinwall Judd, M. D., Formerly Radiologist New York Post-Graduate Medical School and Hospital; etc. 1909. Rebman Co., New York.

The first 100 pages of this book give a series of brief definitions and descriptions of electromedical apparatus and principles. Then follows a chapter on the physiologic action of the x-ray and the various high-frequency currents. The rest of the book is devoted mainly to describing the technic of electrotherapeutics.

The most important function of the radiologist, namely the interpretation of the radiograph, and the application of this interpretation, is not discussed at sufficient length to be of service to even the beginner. Furthermore, the quality of rhetoric displayed is such that it can not escape criticism. However, the practical points on radiography are good, and the opinion of the efficiency of electrotherapeutics is admirably conservative. This contribution will be of some service to the general practitioner who wishes to learn the present limitations and possibilities of electrotherapeutics and Roentgenology. G. F. T.

Textbook of Modern Materia Medica and Therapeutics. By A. A. Stevens, M. D., Professor of Therapeutics and Clinical Medicine, Woman's Medical College, Philadelphia. Fifth revised edition. Octavo of 675 pages. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, $3.50 net.

The demand for the fifth edition of this work indicates the professional estimate of its value. It is an admirable summary of the present position of the subjects of which it treats, its two main subdivisions consisting of materia medica, and applied therapeutics. To the former 500 pages are devoted and the balance of the book comprises a consideration of practical therapeutics. Remedial measures other than drugs receive ample notice. The work as a whole is a very satisfactory guide in remedial agents and their uses, and deserves a continued popularity. J. B. M.

The Practical Medicine Series. Volume IV. Gynecology. Edited by Emilius C. Dudley, A. M., M. D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, and C. von Bachellé, M. S., M. D., Assistant Professor of Obstetrics, Chicago Policlinic and College of Physicians and Surgeons; Gynecologist to the German Hospital, Chicago. Series 1909. The Year Book Publishers, 40 Dearborn St., Chicago, Ill.

This volume gives a full and painstaking review of foreign and American gynecological literature for 1908. No side of the subject has been neglected, and even the general practitioner will find points of interest in looking over these pages. Operative methods in pelvic surgery are reviewed at some length in Chapters IV and V on "Traumatisms" and "Displacements." M. B. B.

Dorland's American Illustrated Medical Dictionary. A new and complete dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, and kindred branches; with new and elaborate tables and many handsome illustrations. Fifth Revised Edition. By W. A. Newman Dorland, M. D. Large octavo of 876 pages, with 2000 new terms. Philadelphia and London. W. B. Saunders Company, 1909. Flexible leather, $4.50 net; indexed, $5.00 net.

The rapid advances in medicine and the allied sciences in recent years, the discovery of entirely new principles, and the adoption of new processes and methods of research have necessitated a frequent revision of our vocabulary and constant additions to it. This demand has been admirably met by the succeeding editions of this work, five having been issued within a little over eight years. Over 2000 new words have been added in the present edition. The inclusion of the B. N. A. anatomic terminology is also a decided advantage. The book has proved very popular and its features are already well known to the profession. The adoption of the revised form of spelling, eliminating the diphthongs and final e in many words, is in accordance with the present trend of American medical writing. The convenient size, clear typographic work, and the completeness and reliability of the text deserve commendation. The work can be heartily recommended as being in every respect most satisfactory.

W. H. W.

Third Report of the Wellcome Research Laboratories at the Gordon Memorial College Khartoum. Andrew Balfour, M. D. Published for the Department of Education of the Sudan Government, Khartoum, by Bailliere, Tindall & Cox, London. Toga Publishing Co., 45 Lafayette St., New York City. Price $5.00 net.

It is with pleasure we note the appearance of the third Report of the Wellcome Research Laboratory. The book contains much material of a most varied character, all of which is of the greatest interest and importance to the student of tropical medicine and hygiene. Considerable space has been devoted to the biological consideration of the protozoa infecting man and beast in he Sudan, and also a clinical survey of the diseases resulting therefrom. Chapters are devoted to the poisonous snakes and helminths of this locality and a most interesting and instructive report on economic entomology is given. Other chapters deal with the healing art practised by the Dervishes; medical practise and superstitions of Kordofan, and the physical characteristics of Nilotic negroid tribes. A short article is devoted to ethnographical specimens and the last chapter is a report of the chemical section in which special attention is given to the chemical analysis of various Sudan gums. The book contains numerous excellent reproductions of black and white drawings and of photographs; the colored plates representing various protozoan parasites and insects are particularly fine. L. W. L.

The Medical Complications, Accidents and Sequels of Typhoid Fever and the Other Exanthemata. By H. A. Hare, M. D., B. Sc., Professor of Therapeutics in the Jefferson Medical College and Physician to the Jefferson College Hospital, Philadelphia, and E. J. G. Beardsley, M. D., L. R. C. P., Philadelphia. With a special chapter on the Mental Disturbances Following Typhoid Fever, by F. X. Dercum, M. D., Professor of Nervous Diseases in the Jefferson Medical College. Second edition, thoroughly revised and much enlarged. Octavo, 398 pages, with 26 engravings and 2 plates. Cloth, $3.25, net. Lea & Febiger, Philadelphia and New York, 1909.

The physician who sees many cases of typhoid fever is often impressed by the fact that this disease presents manifestations, that wander far from the classical descriptions given in textbooks and systems of medicine, which usually touch but briefly upon the accidents, complications and sequelae of typhoid. The aberrant forms of this disease, or the instances in which the course of the malady has been altered by intercurrent affections, are very puzzling to the clinician, and these he will find fully described in this monograph by Hare and Beardsley. Indeed to know typhoid well requires a partial knowledge at least of every branch of medical science. In this second edition the text has been brought fully up-to-date and much new material has been added. The reader who is interested in a particular complication or group of complications will find in this book not only a complete description but will find also given the most important references to the literature. It is disappointing, however, to find the Widal reaction spoken of so frequently as being of great importance in the diagnosis of obscure cases of typhoid fever, and so little importance attached to blood cultures, which, in the experience of the reviewer, have been of infinitely greater value than the former, especially in the diagnosis of cases, seen early in the course of the disease. A very able and instructive chapter on the mental disorders that complicate or follow typhoid has been written by F. X. Dercum.

In this second edition there has also been added a second part which deals with the complications and sequelae of the exanthematous fevers, variola, scarlet fever, measles, chickenpox and rubella. This part maintains the high standard of the other portions of the book.

This is the only work in any language that deals solely with this important branch of medical practise and deserves careful reading by every physician. J. P.

The Practical Medicine Series. Volume VIII. Materia Medica, Therapeutics, Preventive Medicine and Climatology. Edited by Geo. L. Butler, Ph. G., M. D., Henry B. Favill, A.B., M. D., Norman Bridge, A. M., M. D., Series 1909. Chicago: The Year Book Publishers, 40 Dearborn St. Price, $1.50.

This little volume presents concisely the advance during the past year within the lines indicated in its title. Of the three subdivisions comprising the book, about 200 pages cover the field of Materia Medica and Therapeutics, and another 100 are allotted to Preventive Medicine, while the remainder of about 30 pages considers Climatology. Ample abstracts show the general progress in each department, and the book quite thoroughly fulfils its intention of keeping its readers in touch with all of practical value in recent medicine. An index of authors, as well as of diseases and remedies, enhances its convenience for reference.

J. B. M.

The Century of the Child. By Ellen Key. G. P. Putnam's Sons, New York, 1909.

As precaution must always be the highest ideal of medicine, the field of pediatrics with its vast possibilities of prevention through education and early training, has come to bear a very broad significance. Mrs. Key in her book hints at many new ideals which should rightly be assumed by pediatrics in its broadest sense.

She believes that humanity cannot find a higher ideal towards which to work than in the production of a new and higher race of mankind and all education and training of the young should subserve this end. Modern industrial conditions which take women from the home she believes very evil, although she thinks that when children do not demand the mother's attention, every woman should work. The chapters upon education are very spirited. "Not leaving the child in peace is the greatest evil of present day methods of training." Modern schools are bitterly attacked. The educator suppresses all individuality in the child whereas any "tendencies to deviation" should be fostered. The modern solicitude for regular meals of regular foods, for fixed bedtime and playtime and so on, she asserts makes children "nervous, irritable slaves of habit." In the glowing picture which she paints of the future school, the kindergarten method will be abolished and the child made an original investigator from the earliest years. The book is very interesting to any one working with or training children, and deals wisely and sympathetically with the vastly important problems of child life and training. H. H.

Primer of Sanitation. Being a simple work on disease germs and how to fight them. By John W. Ritchie, Professor of Biology, College of William and Mary, Virginia. Illustrated by Karl Hassmann. World Book Co., Yonkers-on-Hudson, New York, 1909.

With this little book the reviewer is delighted; for it is so clear, practical and simple. In these days of medical inspection in the public schools, what a help this work would be to the school nurse! L. W. C.

The Physician's Pocket Account Book, by J. J. Taylor, M. D. Published by The Medical Council, 4105 Walnut St., Philadelphia, Pa.

The author claims for this list a number of advantages over other visiting lists. It is so arranged that it can be begun at any time and continued until filled. The arrangement is such that the original entry is the only one necessary and a ledger is, therefore, not needed. The business suggestions in the beginning of the book seem to be of special value and suggest many valuable points in keeping accounts, rendering bills, making collections, etc. The usual tables of weights and measures, antidotes, etc.; special pages for cash accounts, addresses and other records, are included. It appears to be a very satisfactory little volume.

The Practitioners' Visiting List for 1910. The Weekly, Monthly and 30-Patient Perpetual contain 32 pages of data and 160 pages of classified blanks. The 60-Patient Perpetual consist of 256 pages of blanks alone. Each in one wallet-shaped book, bound in flexible leather, with flap and pocket, pencil with rubber, and calendar for two years. Price by mail, postpaid, to any address, $1.25. Thumb-leather index, 25 cents extra. Descriptive circular showing the several styles sent on request. Lea & Febiger, Publishers, Philadelphia and New York.

This convenient visiting list is issued in various styles and sizes to meet the requirements of either a large or a small number of patients. In addition to the space for the visiting list it contains a considerable amount of valuable information useful in emergencies, table of doses, weights and measures, etc. Space is also reserved for addresses, cash account, obstetric engagements, etc. The make-up of the book is very attractive.

Acknowledgments.

The Practical Medicine Series. Volume IX. Skin and Venereal Diseases, Miscellaneous Topics. Edited by W. L. Baum, M. D., and Harold N. Moyer, M. D. Series 1909. The Year Book Publishers, Chicago, Ill. Price $1.25.

New and Non-Official Remedies, 1909. Containing descriptions of the articles which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association, prior to Jan. 1, 1909. Press of the American Medical Association, Chicago, Ill. 1909.

The Prevention and Treatment of Abortion. By Frederick J. Taussig, A. B., M. D., Lecturer in Gynecology, Medical Department, Washington University; etc. C. V. Mosby Co., St. Louis, Mo.

The Fruits of Medical Research with the Aid of Anesthesia and Asepticism. Charles W. Eliot, LL. D., M. D., (Hon.), President Emeritus of Harvard University.

Annual Report of St. Clair Hospital, Cleveland, Ohio. For the year ending July 1, 1909.

Public Health and Marine-Hospital Service. Bulletin No. 52. Report No. 3 on The Origin and Prevalence of Typhoid Fever in the District of Columbia; The Prophylaxis of Pellagra, C. H. Lavinder; Summary of Transactions of the Public Health and Marine-Hospital Service. Fiscal year 1909, and to November 1, 1909.

Medical News.

A. R. Baker, B. F. Hambleton and L. C. Graber attended the annual meeting of the Allied Educational Association of Ohio held recently at Columbus.

F. C. Waite, J. J. R. MacLeod, T. Sollman and D. Marine attended the sixty-first meeting of the American Association for the Advancement of Science held in Boston during the last week in December.

Harry T. Simmonds of Mt. Vernon, a third year student of the W. R. U. Medical Department, accidentally fell while leaving Charity Hospital on Dec. 6, 1909. He sustained a fractured skull which resulted in death within a few hours.

The St. Alexis Hospital Alumni Association met Monday, Nov. 4, 1909. The program was as follows: 1. Modern Technic in the Management of Obstetrical Cases, J. R. Thompson. 2. Value of a European Trip, J. V. Kofron.

At the December meeting the following program was presented: 1. Actinomycosis, J. V. Gallagher. 2. Nephritis, T. J. Calkins.

The Muskingum County Medical Society had as guests at its November meeting the members of the City Council and Board of Health The object was the discussion of the question of milk inspection for Zanesville. The following papers were read: Municipal Control of our Milk Supply, G. W. McCormick. Dairy and Cattle Inspection, C. A.

Weber, M. D. C. Bacterial Contamination of Milk and Milk Analysis, J. R. McDowell.

At the December meeting the program consisted of a symposium on typhoid fever. The papers were: 1. Etiology and Diagnosis of Typhoid, E. R. Brush; 2. Treatment of Typhoid, C. H. Higgins; 3. Complications and Sequelae of Typhoid, C. N. Hanna.

The Eighth District Society's annual meeting was held at New Lexington on December 2. About 60 were present and two very interesting sessions were held. The visiting physicians were served a sumptuous dinner at the Armory.

Major J. K. Wright of New Lexington, and Lieut. J. R. McDowell of Zanesville, Medical Corps O. N. G., on duty with the Seventh Infantry, were called out with the regiment on strike duty at Bridgeport, Dec. 4 to 8.

The Lorain County Medical Society held its annual meeting at St. Joseph's Hospital, Lorain, Dec. 14, 1909. Walter H. Snyder, president of the Ohio State Medical Association, spoke on "The Need of Organization in Medical Societies."

The Staff of the Elyria Memorial Hospital held the regular monthly meeting at the Hospital on Monday evening, Dec. 20, 1909. W. E. Hart gave a review of Dr Danforth's Life of N. S. Davis. G. E. French gave a paper on "Statistics."

Ernest E. Brown, until recently with N. Stone Scott in Cleveland, has located in Oberlin.

The Oberlin Hospital, organized three years ago, has been able recently to care for only about half of the patients that have applied for admission. A new and larger building is urgently needed.

The Academy of Medicine of Toledo and Lucas County Meetings:

The Surgical Section met Nov. 26. The program consisted of a paper upon the Diagnosis and Treatment of Nephrocoloptosis, by H. W. Longyear, Detroit, Mich.

The General Meeting of the Academy was held on Friday, Dec. 3. Prof. John B. Murphy of Northwestern University read a paper upon Experience in Neurologic Surgery.

The Medical Section met Friday, Dec. 17. The program was as follows: 1. Treatment of Drug and Alcoholic Psychoses, Frank D. Ferneau; discussion opened by C. C. Kirk. 2. Motion, Real and Apparent, Park L. Myers; discussion opened by S. S. Thorn.

The Pathological Section met Dec. 19. C. G. Souder read a paper upon Etiology and Pathology of Leg Ulcer. Following this meeting a special meeting of the Academy for the consideration of the adoption of the regulations of the incorporated Academy was held.

D. M. Marshall, of 504 Main street, Toledo, is seriously ill with myocarditis.

J. F. Liken, a well-known and popular Toledo physician who was stricken with appendicitis November 25, the appendix having perforated, died after a hard-fought battle of 10 days.

Geo. M. Todd of Toledo spent the last week of November in Baltimore, Philadelphia, and other eastern cities, visiting well-known clinics.

The Academy of Medicine of Toledo and Lucas County appointed the following members to serve as a committee to make the preliminary arrangements for the coming meeting of the Ohio State Medical Association in Toledo in 1910: Charles N. Smith, George Chapman, and Clarence D. Selby.

Allen, Auglaize, Shelby, Mercer and Van Wert Counties jointly will construct and maintain a tuberculosis hospital near Lima, the appropriation being $30,000. The ground has been purchased, and work on the buildings will begin as soon as possible.

The Northwestern Ohio District Medical Association held the sixty-fifth meeting at Bellefontaine on Wednesday and Thursday, Dec. 8 and 9. An excellent program was presented. The following officers were elected for 1910: President, D. O. Weeks, Marion; Vice-Presidents, Don C. Hughes, Findlay, and G. M. Todd, Toledo; Secretary, E. A. Murbach, Archibold; Treasurer, S. D. Foster, Toledo.

The Ashtabula County Medical Society held its forty-eighth regular meeting at Ashtabula, Tuesday, Dec. 7. The program consisted of an informal address by the President and a paper on Prehistoric Man in Ashtabula County, by F. D. Snyder. The following officers were elected: President, F. E. Tibbits, Geneva; Vice-President, B. C. Eades, Conneaut; Secretary, L. C. Stiles, Geneva; Treasurer, A. W. Hopkins, Ashtabula; Delegate to State Meeting, O. A. Dickinson, Jefferson, and Alternate, C. E. Case, Ashtabula.

The Erie County Medical Society held a "Booster Meeting" on Wednesday, Dec. 22. W. H. Snyder, Toledo, President of the State Society, who was to address the meeting, was unfortunately unable to be present. C. E. Ford, Cleveland, Councilor of the fifth district, spoke upon Organization and Association Work. E. O. Houck, Cleveland, read a paper upon Treatment of Labor in Contracted Pelvis. Officers were elected for the ensuing year. Everything points to an enthusiastic and interesting year's work.

Public Health and Marine=Hospital Service Examination. A board of commissioned medical officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B street S.E., Washington, D. C., Monday, January 24, 1910, at 10 o'clock a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine-Hospital Service. For further information, or for invitation to appear before the board of examiners, address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."

The Jubilee Number of the *Annals of Surgery,* which completes the fiftieth volume, is a notable one not merely on account of the unusual size but also from the general excellence of the contents. The contributors represent not only American surgery but the progress that is being made in foreign countries as well. Such well known names as Macewan of Glasgow, Moynihan of Leeds, Barling of Birmingham, Hartmann of Paris, and, representing our own country, Chas. H. Mayo, Harvey Cushing, John B. Deaver, Daniel N. Eisendrath, Hugh Young, etc., are to be found among the contributors. It is impossible to detail the various topics discussed in the 23 papers contained in the jubilee number, but the abovementioned names will serve to indicate not only the value of the contributions but in many cases also, the subjects of the papers.

In the near future a general index of the first 50 volumes of the *Annals of Surgery* is to be published and this will be of the greatest value in looking up surgical literature since the *Annals* has always represented a very high plane of surgical progress.

Deaths.

F. W. Fisher, Ashtabula, Ohio, died Nov. 25, aged 38.

Milton S. Pixley, Cincinnati, Ohio, died Nov. 29, aged 67.

John F. Likin, Toledo, Ohio, died November 25, aged 45.

Chas. H. Bogman, Zanesville, Ohio, died December 6, aged 66.

John W. Ringer, Cambridge, Ohio, died December 12, aged 55.

Thos. M. Carroll, Springfield, Ohio, died December 7, aged 71.

Harry T. Simmonds, Mt. Vernon, Ohio, died December 6, aged 26.

Jacob Schneider, formerly of Cleveland, died at Daytona, Fla., Dec. 11, aged 34.

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Some Modern Aspects of Experimental Diabetes

By J. J. R. MACLEOD, M. D., Cleveland

In the evolution of scientific knowledge, and more especially in that pertaining to experimental biology and medicine, there has always been a tendency for the latest striking results in the field of research to be considered of greater importance than those of older date. The latest discovery, especially if it should seem to possess some so-called clinical application, has not infrequently at first failed to find its true place in the chain of evidence of which it forms a part, and which is being assembled towards the final soluion of some problem in animal function. The last witness on the stand not infrequently creates the greatest impression, and the verdict which should be drawn from the evidence as a whole is too often unbalanced and thereby rendered unsound by the unequal weight given to that which was last presented.

To no chapter of experimental physiology can this criticism be more fairly applied than to that of carbohydrate metabolism. The close relationship between the purely scientific phase of the question, and the possible application of the results in revealing the cause or indicating the treatment of diabetes in man, has made investigation in this field a popular one for the research worker, both in pure physiology and in experimental medicine, so that an immense amount of literature has accumulated. But not infrequently has it happened that undue weight has been given the last obtained results without any attempt at corelation between them and previous work.

Read before the Experimental Medical Section of the Academy of Medicine of Cleveland, December 10, 1909.

The history of experimental investigation in carbohydrate metabolism must really start with the discovery of Claude Bernard of the presence in the animal body, more especially in the liver, of a substance—glycogen—which could be shown to be readily resolvable into dextrose by stimulation of certain portions of the nervous system.

The announcement of this discovery turned attention to the so-called glycogenic function of the liver, and it was considered that the excess of sugar which accumulated in the blood, and therefore in the urine, in diabetes must owe its origin to a perversion of this glycogenic function. The famous lectures of Claude Bernard on the relationship of this glycogenic function of the liver to glycosuria in rabbits, and his ability to excite the sugar production of the liver by direct or indirect stimulation of a nerve centre, raised the hope that the disease in man is due to disturbances of a similar nature, and therefore that before long some means would be found to depress the abnormal nervous stimulation and so bring about a cure of the disease. For many years after Bernard's discovery, the attention of innumerable workers in this field was therefore directed to such questions as the relationship of the various foodstuffs to glycogen formation, the causes at work in the conversion of glycogen into dextrose and the various agencies, besides stimulation of the nervous system, by which the glycogenic function could be put out of order. The practical outcome of all this painstaking work bore fruit in the palliative treatment of the disease in man, for it indicated of what nature the diet should be in order to diminish the production of sugar in the body and so prevent the secondary complications apt to be associated with hyperglycaemia; but it offered no clue as to the essential cause of the disease. It demonstrated clearly however that the glycogenic function of the liver could not alone be at fault. For three decades this type of experimental work went on, its chief participators being, besides Bernard himself, Eckhard, Schiff, Külz, Pavy and Seegen.

In 1889 von Mering and Minkowski announced the discovery that complete pancreëctomy, in the case of most animals, is followed by a severe form of diabetes much more like the disease observed in man than that which results from nerve stimulation. In piqûre, for example, it was found that although the hyperglycaemia and glycosuria might be intense, it was only temporary, disappearing when all the glycogen in the liver had been used up and indeed not appearing at all when, to start with, the animal had been rendered glycogen-free, by starvation or muscular work. In pancreatic diabetes, on the other hand, it soon became evident that the amount of glycogen in the liver bore little relationship to the excessive accumulation of sugar, for the diabetes persisted after practically all of this had disappeared, indeed persisted until the animal died as a result of emaciation. It was further found that, by removal of the pancreas, the organism had lost the power of destroying dextrose, for practically all that was given in the food could be recovered unchanged in the urine. The attention of investigators was thus diverted from the liver to the pancreas as the organ in the body whose function was primarily at fault in diabetes. Confirmation of such a belief was further obtained by the observations of numerous pathologists that pathological lesions are common in this viscus in diabetes. This influence of the pancreas could not, however, be attributed to the glandular structure itself for this might be quite destroyed and yet no diabetes follow. It must rather be a function of the epithelial islets of Langerhans, located in the connective tissue of the gland, and the peculiar function of these, it was argued, must be to secrete into the blood some substance which, either directly or indirectly, facilitates the destruction of sugar in the body. Prompted by this idea, attempts were made to see whether extracts of pancreatic tissue possess any power of destroying dextrose in incubation experiments. The results were negative. It was then suggested, by the discovery of enterokinase, and its power of activating trypsinogen, that the internal secretion of the pancreas might only be the activator of a pro-ferment produced elsewhere in the body, and that, when this activator and its pro-ferment met, an active sugar-splitting ferment would result. Cohnheim announced the discovery of such a mechanism, the pro-ferment, he thought, being present in muscle. Unfortunately, however, Cohnheim's claims have been seriously called in question, although there appear to be some who are willing to accept them without further proof.

Brilliant as these discoveries were, they however furnished no clue as to the essential cause of the disease in man, nor did they offer any aid in the treatment, for administration of pancreas did not alleviate the symptoms; a great disappointment in view of the remarkable success which, about this time, had followed the administration of thyroid extract in myxoedema. Search for other influences controlling carbohydrate metabolism resulted in the discovery that the secretion of another ductless gland, namely the suprarenal, had some important function in this regard, for the injection of extracts of the gland into a healthy animal caused hyperglycaemia and glycosuria associated with which there was observed to be disappearance of glycogen from the liver. Such a result could, however, be obtained by the administration of a variety of chemical substances, such as morphin, curare, ether, etc., but the adrenalin injection was found to differ from these in that its power to produce glycosuria does not depend on the presence of glycogen in the liver since it follows the injection even after all of this has been made to disappear. In such cases the adrenalin will still cause a distinct, though less marked, glycosuria, and will besides cause glycogen to become deposited in large amounts in the liver although no foodstuff, capable in itself of doing this, is given (Pollak).

The latest contribution to the influence of secretion of ductless glands on carbohydrate metabolism consists in the discovery that excision of the thyroids (with the preservation of the parathyroids) endows an animal with the power of assimilating more carbohydrate than normal and renders it less prone to become diabetic when given adrenalin or ether. When thyroid extract is given these thyroidless animals, their assimilative power for sugar falls to the normal and they again become susceptible to glycosuria. It is interesting in this connection to note that injection of large doses of thyroid extract to a healthy animal can often bring about glycosuria and that in cases of hypothyroidism in man (myxoedema) diabetes is unknown, the assimilation limit for sugars being considerably higher than normal, whereas in hyperthyroidism (exophthalmic goiter) diabetes is not uncommonly present and the assimilation limit for sugar is always very low. An entirely contrary result is obtained, when the parathyroid glands are removed, viz., a diminution in the power to assimilate sugar which is usually so marked as to render the animal glycosuric. The thyroid and the adrenal gland would therefore appear to produce internal secretions which depress the assimilative power of the organism towards sugar, and the pancreas and parathyroids to stimulate it. The interrelationship of these opposing influences in the assimilation of sugar in the intact animal is at present a complete mystery. One hypothesis is that the internal secretions of the adrenal and the thyroid glands exert an inhibiting influence on the glycolytic (sugar destroying) action of the internal secretion of the pancreas, and that the parathyroidal secretion augments this. Until it is finally settled of what nature the influence of the pancreas in carbohydrate metabolism is, such an hypothesis as this is of course of little value; indeed, it is nothing more than another way of stating that the adrenal and thyroid secretions have an opposite influence to that of the pancreas in the ultimate effect which they bring about in this regard.

One result of this recent work in experimental diabetes has been to direct attention from the mechanism which of all others is almost certainly the most directly concerned with carbohydrate metabolism, I mean the glycogenic function of the liver. The brilliancy of the work in pancreatic diabetes, etc., has thrown in the shade the older, but no less important, work on the glycogenic function of the liver. In evidence of the important rôle which the glycogenic function of the liver plays in practically all of the more recently discovered forms of experimental diabetes, the following observations may be cited:

1. In all forms of experimental diabetes, the source of the sugar is in the first instance the glycogen of the liver. In some forms, such as that which follows stimulation of certain nerves and nerve centres or that which follows asphyxia, the glycosuria ceases when all the glycogen of the liver has been used up. Removal of the liver from the circulation by a diversion of the portal blood into the vena cava prevents the hyperglycaemia in these forms.

2. In other forms of experimental glycosuria, such as that which follows extirpation of the pancreas, the hyperglycaemia persists after all, or practically all of the glycogen in the liver has been used up and the liver loses the power of synthesizing glycogen from dextrose. The same thing is seen in diabetes mellitus. In the earlier stages in both of these conditions, however, glycogen can still be formed from laevulose and the sugar can still be assimilated by the tissues.

3. That the liver is in some way abnormally active during the condition which supervenes on complete pancreatic extirpation is demonstrated by the fact that after death from this condition the liver is abnormally large and loaded with fat.

4. When adrenalin is given in repeated doses to starved animals it does not produce so marked a glycosuria as when the liver contains glycogen, but after death the liver has been found to contain large amounts of this substance.

5. Repeated administration of phlorizin causes a diabetic state ultimately ending in death. Although the primary seat of action of this drug is the kidney, the sugar at first formed comes from the glycogen of the liver, later it comes from proteid or fat.

It is by no means intended to imply that the glycogenic function of the liver is the mechanism which is essentially at fault in these various forms of diabetes but it is insisted that in them all this is either primarily or secondarily affected. It must therefore be evident that a clear understanding of the workings of the glycogenic mechanism is as important in the development of our knowledge of faulty carbohydrate metabolism as anything else. And yet, we know very little about it. We know approximately what foodstuffs lead to the deposition of glycogen, we know what conditions, besides those producing glycosuria, can affect its entire disappearance, we know that after death it rapidly disappears, and so on; but we are entirely in the dark as to the nature of the agencies which bring about its synthesis from sugar, or as to the form in which it exists in the liver (or other) cells (merely deposited or in some way united with protoplasm). We do not know what influence it is which determines its rapid conversion into sugar after death, or in the various forms of glycosuria during life. We know that the nervous system in some way exercises a great control over the process but how!—we cannot state. Our knowledge merely touches the fringe of the subject.

There are one or two phases of this subject which it may be of interest to dwell on a little more fully. One of these is with reference to *the nature of the agencies which produce and destroy glycogen.* It is usually assumed that ferments are responsible for these effects and, since both actions take place most energetically in the liver, it is further assumed that the cells of this organ is the place of their production. And yet we have found in the course of our researches that the amount of glycogen-splitting ferment in the liver is no greater than that in other portions of the body; indeed, there is usually distinctly less here than in the blood itself. Nor does an increase in the glycogen-splitting activity of the liver seem to cause any increase in the activity of ferment extractable from it. Evidently then, it is not the mere *presence* of ferment in the liver cell which determines whether or not glycogen formation or breakdown shall occur, but the liver cell itself exercises the essential control over the process, perhaps by its inhibiting or accelerating the action of the ferment. It is possible that the same ferment, by reversing its action, both produces and breaks down glycogen. The recent studies on reversible action of lipase and maltase have shown that such a reversion in the usual disrupting action of ferments occurs when a large excess of the products of disruption are present. If such accumulation of sugar in the liver cells is what causes the reversion of action of the glycogenolytic ferment, then these cells must have the power of picking out the sugar from the blood and accumulating it in their protoplasm until there is a sufficient excess to incite the reversible action; but there is no evidence that the liver contains any more free sugar during the absorption of a carbohydrate-rich meal than at other times. It would appear more reasonable to assume that the liver cells have a control over the direction of action of the ferment, or that some other special synthetic ferment is responsible for the result. The presence of an excess of dextrose in the portal blood may excite the liver cell to bring about the synthetic process.

Closely linked with this question of the cause of glycogen synthesis and hydrolysis is that of *postmortem glycogenolysis*. Almost immediately after death there is a rapid conversion of glycogen into dextrose. What is the cause of this? Or, in other words, what prevents this process during life? Can it be the control of the nervous system over the activities of the hepatic cells? Evidently not so, for section of all the hepatic nerves does not bring it on. When, however, the portal vein is clamped for some time, the process starts, showing that it must in some way be dependent upon the circulation of blood in the liver, although here again there is a deep mystery, for stagnant blood accelerates the process. Is it possible that there is some substance in the blood which inhibits the process but which becomes quickly used up unless fresh blood is supplied? or may it be that products of asphyxia accumulate in the stagnant blood surrounding the liver cells and that those have a stimulating effect on the process? Asphyxia is invariably followed by glycosuria, but section of the hepatic nerves, as a rule, prevents asphyxia having this result, thus indicating that the asphyxial blood does not act directly on the hepatic cell. It is generally accepted that the abnormal transformation of glycogen into dextrose which occurs in the various forms of experimental glycosuria is in its nature essentially the same as the *postmortem* process, which makes a knowledge of this of great importance.

Why does stimulation of certain portions of the nervous system cause excessive glycogenolysis? There is no more certain way of producing hyperglycaemia than stimulation of the great splanchnic nerve in a well fed animal and yet we can at present offer no satisfactory explanation for the result. Does the stimulation bring about some vascular change in the liver which, like clamping of the portal vein, tends to the onset of *postmortem* glycogenolysis, or is the influence of the nerve directly on the hepatic cell controlling its glycogenic activities in much the same way that the chorda tympani controls the secretory activities of the salivary gland cells. It is not improbable that adrenalin and some other chemical substances owe their glycosuria-producing action to stimulation of the sympathetic system. It is known that one function at least of the internal secretion of the adrenal gland is to keep the nerves of the sympathetic system in tone; an excess of it in the blood stimulates these same nerve fibres, one result being a rise in blood pressure, another result the excessive production of sugar by the liver. May the isles of Langerhans not also exercise some influence over the sympathetic system?

To all *chemical* tests the dextrose which is formed from glycogen in the liver and discharged into the systemic circulation is the same as that absorbed from the intestine. May it not, however, be somewhat different in its *biochemical* nature? May it not, in its transformations in the liver, become just so modified as to render it more susceptible of utilization by the tissues? If this could be shown to be the case, then many forms of glycosuria could be readily explained by failure of the glycogenic function of the liver. The usual teaching at the present day is that failure of the organism to destroy dextrose is the essential error of metabolism in diabetes. This error is supposed to be on the part of the tissues, muscles, etc., in which the actual destruction of dextrose occurs. If the above hypothesis could be sustained then the failure to utilize the dextrose might be the fault, not of the tissues in which the actual consumption occurs, but of the liver (and other glycogen-producing organs and tissues), where the carbohydrate is prepared for consumption.

There are many questions of the same nature which might be raised but we have no data from which any solution of them is possible. We know that the glycogenic function of the liver is a most important part of the machinery concerned in the metabolism of carbohydrate in the animal body and moreover that it is a portion of the machinery which is relatively accessible to investigation. It would seem rational to urge, therefore, that more attention should be paid to it.

Tests of Insanity in the Probate Court

By FRANK HIGLEY, LL. B., Cleveland

In England from a very early period the King was considered to assume the care of insane persons and their property, and to delegate his care to the Lord Chancellor, who exercised his jurisdiction, not by virtue of his judicial office, but as the direct delegate and representative of the crown, deriving his authority from royal warrant under the sign manual of the sovereign delivered to him upon his coming into office.

In the exercise of this jurisdiction thus delegated to him the Lord Chancellor appointed guardians for insane persons, made inquests as to insanity, and assumed general jurisdiction over the custody and control of insane persons and their estates.

In the State of Ohio the Probate Court by statute is vested with substantially the same jurisdiction as to insane persons as was exercised by the Lord Chancellor in England, and the Probate Court is also given jurisdiction to probate wills. It becomes necessary to apply legal tests as to insanity in three different proceedings in the Probate Court.

1. In the probate of wills.
2. In the appointment of guardians for insane persons.
3. In making inquests as to insanity.

In each of these proceedings the Probate Court applies a different test in the determination as to the sanity or insanity of the person whose mental condition is the subject of the inquiry.

Read before the Medicolegal Section of the Cleveland Academy of Medicine, October 29, 1909.

Section 5914 of the Revised Statutes authorizes the Probate Court to admit a will to probate "if it shall appear that such will was duly attested and executed, and that the testator at the time of executing the same was of full age and of sound mind and memory and not under any restraint."

In the proceeding to probate a will, persons interested to resist the probate of the will are not allowed to introduce evidence to contest its validity.

The Probate Court in this proceeding presumes the testator to have been sane until it affirmatively appears otherwise, and unless it clearly appears from the will or from the testimony of the witnesses to the will, that the testator was insane, the will, if in legal form, is admitted to probate by the court, and the questions of mental capacity of the testator and undue influence are left for a trial by jury in the Common Pleas Court, if the will is contested.

The Statutes of Ohio also authorize the Probate Court upon satisfactory proof that any person a resident of the county is an "idiot, imbecile or a lunatic" to appoint a guardian of the person or estate, or both, of such person.

In determining whether a guardian shall be appointed over such insane person, the Probate Court is not alone concerned with whether such person is insane within the medical meaning of insanity, but also considers whether the mental condition of such person is such that it is necessary or desirable for the benefit of such person or the protection of his property that a guardian should be appointed.

The rule which is applied in the appointment of a guardian is stated in a legal textbook as follows: "Generally speaking the test of whether a guardian should be appointed for the estate of a person, is whether mental unsoundness exists to such a degree that he is incapable of conducting the ordinary affairs of life, so that to leave his property in his possession and control would render him liable to become the victim of his own folly, or of the fraud of others." 22 Cyc. 1139.

Perhaps the rules which govern the Probate Court in appointing guardians can be better shown by a reference to a few decisions of the Probate Court reported in Ohio than by any abstract statement of the rule.

In one case it is held that weakness and infirmity coupled with old age, and easy susceptibility to influence, which would authorize the setting aside of a will, would not amount to such mental unsoundness as to warrant the appointment of a guardian, and that the mind of the person must be so unsound that he cannot apply his faculties to the management of his affairs or the government of himself, to warrant the appointment of a guardian. In re Tempest, Goebel, 200, 208.

In another reported case it was held that "the fact that his memory is greatly impaired and that a person is less careful of his property than formerly, or subject to the influence of extravagant children, and wasting his property, will not justify the appointment of a guardian. It must appear that the mind of such person is so unsound that he cannot apply his faculties to the management of his affairs, or the government of himself." In re Shelleig 8 N. P. 399, 11 O. Dec. 88.

In another reported case, in which it appeared that a woman 77 years of age administered to her own support, provided her own table, made her own purchases, even to laying in her own coal, and lived in her own rooms, keeping her own house, and was going about the streets and calling upon her friends without assistance, and conversing with them intelligently, it was held that the mere fact that she showed some of the infirmities of age, such as forgetfulness and unusual susceptibility to the influence of her children, or peculiar conduct, such as greeting acquaintances on the street in an extremely friendly and caressing manner, was not sufficient to authorize the appointment of a guardian.

On the other hand, the Probate Court has in many instances appointed a guardian upon the ground of mental infirmity of the subject of such guardianship, when such ward was not a proper subject for confinement in the State hospital for the insane.

There are many insane persons who are not necessarily dangerous to themselves or the community, and it would be wrong to deprive them of their liberty or control of their property because of their mental unsoundness, until it is first shown that some form of guardianship is necessary for their well being. It is apparent that in an individual pursuing a mechanical vocation mental unsoundness, even to a very considerable degree, might not impair his usefulness, and yet that in a professional man like a judge, lawyer or a physician the least mental derangement might jeopardize the entire value of his personal services and require also, from the more enlarged character of his possession, that he should be assigned to a guardian.

The necessity for thus differentiating between persons of mental unsoundness according to the extent of power present in them for self-guidance or the care of property, forms one of the most delicate and difficult problems with which the Probate Court has to deal. The laws of Ohio also authorize the Probate Court, upon satisfactory proof that any person resident of the county where the application is made is incapable of taking proper care of himself by reason of intemperance or habitual drunkenness, to appoint a guardian of the person and property of such person, or either.

In the case of an appointment of the guardian under this law the court is governed by the same considerations as in the appointment of a guardian over an insane person, and appoints such guardian only when it is necessary in the interest of such person.

It is worthy of note that in some States, by statute, the appointment of guardians over a class of persons designed in law as "spendthrifts" is also authorized.

In New Hampshire a spendthrift is defined by statute to be "a person liable to be put under guardianship by reason of excessive drinking, indulgence, debauchery, vices or habits of any kind."

Article 7, Section 1 of the Constitution of Ohio, provides that "institutions for the benefit of the insane and blind and deaf and dumb shall always be supported by the State and be subject to such regulations as may be prescribed by the General Assembly."

In pursuance of this constitutional provision the State has established institutions for the care and treatment of the insane and has vested in the Probate Courts of the several counties of the State, jurisdiction to commit persons to such institutions.

In order to obtain the admission of an insane person to such institution, there must be filed in the Probate Court an affidavit stating in substance that the affiant believes such person is insane, or that by reason of his insanity his being at large is dangerous to the community. Upon the filing of such affidavit a warrant is issued by the Probate Judge requiring such person to appear before the judge and a hearing before this court is had, and if upon hearing of the testimony, the court is satisfied the person who is charged is insane, the law provides that the court shall cause a certificate to be made out by two medical witnesses in attendance who shall have had five years of experience in the practise of medicine.

These witnesses are required to answer certain interrogatories relative to the mental condition of such person, the form of which are prescribed by the Board of State Charities.

By Section 720 of the Revised Statutes of Ohio, it is provided that the term insane as used in the statutes relative to the admission of insane persons to the State institutions for the insane, shall include "every species of insanity or mental derangement."

Although the statute contains this very comprehensive definiton of insanity, the Probate Court will not necessarily commit a person to the hospital for insane on mere showing that he is insane, in the medical sense of insanity.

It may be stated as a general rule that no person will be committed by a court to a hospital for the insane in Ohio or any other State of the United States, unless it appears that the welfare of the patient or of the community requires such restraint.

In the determination of whether a person shall be sent to the hospital for the insane the Probate Court will inquire:

(1). Whether such person has any form of mental derangement;

(2). Whether his condition is such that it would be for the best interests of such person or the interest of others that he be sent to such hospital.

Even after the Probate Court upon inquest has found that an insane person should be admitted to a State hospital for the insane the relatives of such person can prevent the commitment of such person to the hospital for the insane.

Section 705 of the Revised Statutes of Ohio provides that "the relatives of any person charged with insanity, or who is found insane, shall in all cases have the right to take charge of and keep such insane person charged with insanity, if they desire to do so; and in such case the Probate Judge before whom the inquest has been held shall deliver such insane person to them."

There are many textbooks, both medical and legal, treating of insanity, in which it is attempted to give a definition of insanty, and it is interesting to note the great diversity of such definitions of insanity, both from the medical standpoint and that of the law.

It is apparent from a consideration of the tests of insanty applied by the Probate Court in its exercise of jurisdiction, that a person may be insane according to medical science, and yet be capable of making a will and possessing such mental capacity that the court would not be justified in appointing a guardian for him or sending him to a hospital for the insane.

Perhaps the distinction between medical insanity and insanity from the standpoint of the law is no more clearly stated than in Bouvier's Law Dictionary, in the following language:

"The legal and medical ideas of insanity are essentially different, and the difference is one of substance. The failure to keep it in mind has been the fruitful cause of confusion in trials involving the question of mental capacity for crime or contract, and has tended to render valueless and often absurd the testimony of witnesses called as experts. Many of these have testified without any conception of the real nature and definition of the insanity which alone could have relation to the case."

"Insanity in medicine has to do with prolonged departure of the individual from his natural mental state, arising from bodily disease. Insanity in law covers nothing more than the relation of the person and the particular act which is the subject of judicial investigation. The legal problem must resolve itself into the inquiry whether there was mental capacity and moral freedom to do or abstain from doing the particular act." Bouvier's Law Dictionary, page 1050.

It follows from what has been said that there can be no general definition of legal insanity, and that it is merely a state or condition which must be noted with reference to each class of actions to which it is applied.

641 Society for Savings Bldg.

Tests of Insanity in the Probate Court

By CHARLES H. CLARK, M. D., Cleveland

The medical profession has grave responsibilities thrust upon it by enactments on the statute book relative to the commitment of persons alleged to be insane to hospitals provided for their reception, and in the administration of the law in such matters the Probate Judge is aided and guided in his final settlement of the

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case by the testimony and opinion of the examining physicians. There are few things about which the American people are more sensitive than those related to personal liberty, to civil capacity, and to the control of property, and as these are the inalienable rights of all citizens they can be denied them only by due process of law. As the grounds on which a citizen of the State can be legally deprived of his liberty and the pursuit of happiness on account of a mental disease, the law of Ohio recognizes only as a sufficient cause, that the individual must be insane or in consequence of his insanity his being at large is dangerous to the community, and when any citizen of any county in the State makes complaint and affirms that an individual is insane and that his being at large is dangerous to himself or the community, the Probate Judge institutes an inquest and issues subpoenas for such witnesses as he deems necessary, two of whom are physicians, and proceeds to examine the witnesses in attendance, and if upon hearing the testimony, he is satisfied that the person so charged is insane, he shall cause a certificate to be made out by the two medical witnesses in attendance, who shall have had at least five years' experience in the practise of medicine. At the conclusion of the inquest the Probate Judge, either issues a warrant for the conveyance of the patient to the State hospital or turns the patient over to the custody of his relatives, if they so request it.

The number of lunacy inquests in a county with the population and size of Cuyahoga during a year is several hundred; therefore, the most frequent medicolegal duty devolving on a medical man is that of signing the statutory medical certificate for the placing of patients in hospitals for the insane. No physician should affix his signature to a certificate which will deprive an individual of his liberty, remove him from his home and associates, thereby rendering those dependent upon him destitute, as is frequently the case, without a careful, rigid and painstaking inquiry into the mental state of the alleged insane person and all the known and recognized tests of insanity should be used to bring out the symptoms of the disease. The examining physicians should fully and conscientiously satisfy themselves on two points: 1. That the individual is insane. 2. That incarceration in a hospital is necessary or advisable for the best interests of the patient and all concerned.

Many persons are insane in a medical, and even in a legal sense, who have so much self-control, or their disease is of such a character, that forcible detention in a hospital is not necessary; but if their conduct is such that there is danger to themselves or others, if they are a menace to the public peace, and if they lack the ability to manage their affairs, the question of certification becomes a necessary duty.

Naturally, the first problem that confronts us is, What is insanity? If we can formulate a satisfactory definition for the condition we are in a better position to apply the prevailing tests to bring out the symptoms of the disease. Innumerable attempts to frame a definition of insanity have been made by eminent alienists, but up to the present time there is no satisfactory or perfect definition. The majority of alienists give as a reason for attempting to define the term, that they do so from purely academic and medicolegal reasons; however, each sincere effort on the part of alienists will bring us nearer the truth, until some person will come forward with a statement that will receive general recognition.

To bring this subject clearly before you, I will quote a few definitions from recognized authorities in the special study of psychiatry.

"Insanity is a brain disease, since it is a logical and self-evident consequence, that the organ which under normal conditions subserves the purposes of psychical processes, must be the seat of changes if the functions are disordered." (Krafft Ebing.)

"Insanity is a cerebral affection, ordinarily chronic, without fever, characterized by disorders of sensibility, of the intelligence, and of the will." (Esquirol.)

"The proposition that mental diseases are brain diseases will hardly be disputed by any specialist of today." (Wernicke.)

"Insanity is a special disease characterized by the accidental, unconscious, and more or less permanent disturbance of the reason." (Regis.)

"Insanity is a disorder of the mind due to disease of the brain, manifesting itself by a more or less prolonged departure from the individual's usual manner of thinking, feeling and acting, and resulting in a lessened capacity for adaptation to the environment." (White.)

"Insanity is a morbid condition of the mind which renders it impossible for the conscious individual to think, feel or act in relation to his environment in accordance with the standard of his bring-up." (Abbott.)

It would extend the length of this paper to enter into a discussion of the various definitions quoted. They all have their good points as well as their defects. The last two definitions are quite similar and more fully represent the modern ideas and conception of psychiatry.

The general functions of the brain,—feeling, thinking and acting, subserve the continuous adjustment of the individual to his environment, and a careful analysis of an individual's environment, his conception or understanding and reaction to it would give us a judgment as to his sanity or insanity.

A full comprehension of what we mean by environment is necessary before we enter into the study of the subject, and in a general way it may be said that the real environment consists of: (1). The necessary conditions of all existence, without which nothing could exist or happen, namely, space, time, energy and law or necessity. These are outside of, and hence, objective to the individual, and hence form a part of his environment.

(2). The material objects, such as land, buildings, persons, and modes of energy, such as heat, light, etc., exist independently of the individual, and are objective to him.

(3). The mechanical spatial and temporal relations among these material objects and modes of energy, such as the presence or absence, nearness or remoteness in time and place; these again, are objective to the individual and exist whether he does or not.

(4). The organic and social relations between such parts of the environment already mentioned, as can by their nature have relations, that is an individual is a part of a community and being one of many he must have dealings with others, who also have dealings with each other. These are outside of, and therefore, objective to the individual, and these form a part of his environment.

(5). The relations of obligation and right, as between individuals and any individual to the community, that is as a member of the community whether it be the numerically small one of family, partnership, business or social organization, or the larger one of town, State or country; whatever the community, and whatever its size, the individual holds certain rights and privileges and in turn owes certain duties and obligations; the community, as a community, invests each of its constituent parts with these rights and privileges, and demands from them certain obligations. Each individual is entitled to his life and liberty and may defend himself if these rights are invaded, and each other is under obligations to respect these rights. Since man is the product and a member of the community he cannot escape these rights and duties. They are objective to him, existing whether he thinks or knows of them or not; and hence, form a part of his real environment, therefore if we would judge of the sanity or insanity of an individual we must know his environment, his conception of it, and his reaction to it.

In order that the continuous adjustment of the individual to his environment could take place, three things are necessary: (1). Through the special nerves of hearing, seeing, smelling, tasting and feeling the knowledge of the environment must be gained. (2). This knowledge must be associated and brought into relations with previous experiences. (3). It must be transformed in the central nervous system into appropriate action.

If the sensations of the environment conveyed to the mind through the sensorium are misinterpreted, we have illusions, and on the other hand if we have perceptions without sensory foundation in the environment we have hallucinations.

As illusions and hallucinations are erroneous perceptions and the mental process is identical in both instances it has become customary to use but the one term, hallucinations, which includes the phenomena of illusions.

Hallucinations of hearing are extremely frequent and vary from simple sounds as tinnitus aurium, whispering, roaring, to complicated music, and words and sentences. A most important sense perception of hearing are the so-called voices; the basis of their importance lies in the fundamental significance of language in our psychic life. The voices have an intimate relation to the content of consciousness, in fact, they are the patient's inmost thoughts; they mock him, threaten him, tell his secrets, and are heard in the whistle of the engines, and in the barking of dogs, etc. They are seldom indifferent to the patient but are almost always accompanied by strong emotional disturbances and wield a powerful influence over the patient's actions. They make him distrustful, drive him to angry attacks on his imaginary tormentors.

Hallucinations of sight are also frequent sense deceptions and vary from the simple sparks, lights, flames, spots, clouds and shadows, to more complicated things, such as groups of persons and landscapes with perfect detail; occasionally the visual hallucinations are horrifying in their nature and produce intense emotional excitement, particularly the zooscopic hallucinations of alcoholism. Hallucinations of common sensibility may appear anywhere in the skin or the mucous membranes in the form of twitching, prickling, electric shocks, tingling sensations of heat or cold, indignities of sexual organs, etc. Hallucinations of smell are not so common; the patient perceives the odor of drugs, poisons in food, noxious gases, smoke, filth, etc. Occasionally there are pleasant odors of perfume and flowers. Hallucinations of taste are generally combined with those of smell because of the close physiological relation of the two senses and they are frequently of the most disagreeable character.

Persistent hallucinations overpower judgment and exert an irresistible influence over the entire thoughts and actions of the patient. In some they are treated as actual phenomena; as if they were normal sensations; or they are distinguished from ordinary sensations, as being peculiar and novel and inspired by supernatural processes. In others there is insight into their morbidity, and they are believed to be induced by enemies or evilly designed persons. They frequently induce delusions and the patient's conduct and actions are in keeping with them, and often lead to imperative acts which may be of a violent nature. Hallucinations are so extremely rare in normal conditions that they are to be considered as almost pathological, and therefore, are very important tests in insanity.

Again, if the sensations of the environment are not thoroughly understood and the individual's conception of it is faulty, it may be the result of ignorance, error or delusion. Many influences may normally affect the correct understanding of the environment, most important of which are race, parentage, education, social conditions and customs, and some of these may change from time to time; but as a normal man is a progressive being throughout his life, he will keep pace with the various changes of environment. Also internal influences may arise within the individual, which will affect his conception of his surroundings, for example, his age—children are more or less ignorant, the defective or imbecile is ignorant; his natural capacity for education and the emotions such as grief, fear, joy, anger, suspicion, pride and hatred, also prejudice, dogmatic opinions, ideas firmly fixed by tradition, education and habit, acquire an overwhelming emotional value, and not only persist in spite of experience, but mould experience into conformity with themselves; and in cultured people, political and religious convictions, although more or less dependent on the rational elaboration of experience for their content, are characteristically inaccessible to opposition and argument. These peculiarities of normal thought help us to understand the delusions of diseased consciousness.

The emotional or affective attitude so influences the thinking that he cannot see the true relations in argument. Many of these factors may conspire to cause error or misconception of the environment on the part of a normal individual, but if they can be eliminated as causes of misconception or understanding and no other adequate rational ground for error can be found, we must conclude that the misconception is a delusion; that is, a false belief. Or a better definition would be, a belief in something that would be incredible to people of the same class, education, or race, as the person who expresses it, the belief persisting in spite of proof to the contrary. The presence of delusions is one of the most important tests of insanity, and for the most part they center in self, either as self-depreciation or self-aggrandizement, and they exercise a marked influence over the individual's attitude toward his environment.

When delusions are entertained by an individual, he generally gives utterance to them in words, or so acts that delusions are suspected or inferred; giving utterance to delusions is an act, using the word act in the broader sense, therefore, the individual's acts assume considerable importance in the judgment of his sanity.

Since everything we do is directed more or less consciously to accomplish some purpose or end in relation to our understanding of the environment, and since a normal act is proportioned to the end in view, we must know in solving the question of insanity of an individual, in doing an act, what his motive or purpose was, in order to determine whether it was in proportion to the environment and his understanding of it, or whether the act was in proportion to the purpose of the environment. In determining these factors we can see wherein an act was disproportioned to the environment; also whether the act was from choice or the result of inability to think or act differently when previously he had been able.

Our conception of what constitutes insanity in an individual, therefore, is the result of observation of the patient in relation to all of his activity. We must observe, not only his environment, but his conception of it, his reaction to it, his purposes formed in relation to it and his acts. In order to bring out what ideas he entertains regarding his environment, it is necessary to interrogate the patient on such lines as to whether he is oriented as to time, persons and place; as to his perceptions of his duties and obligations to others, and as to his present and future intentions, etc. Questions should be propounded to test his ability to recall experiences, and his capacity to retain new impressions. These tests will not alone bring out the memory disturbances, but will show whether there is clearness of apprehension, active attention or difficulty of apprehension, clouding of consciousness, distractibility and indifference.

We must observe, too, his general feeling tone, as indicated in his looks or attitude, and his own expression of his feelings. We have such states as exultation, which is a feeling of happiness or well being; depression, the opposite condition to exultation, with anxiety, precordial pain, difficult breathing, etc., and emotional deterioration, in which there is an indifference or absence of any feeling.

Inquiry should be made into the motor activities of the patient in relation to his environment. The insane assume a number of strange attitudes, and perform illogical acts. These attitudes and acts are only reflexes of the new orientation of the personality of the predominating emotions and false beliefs. We have increased or retarded psychomotor activity; stereotyped or purposeless movements; spontaneous or automatic movements; accurate and well directed movements to the end in view, or careless, crude and clumsy movements.

We can also study his ability to do certain things, for which his bringing up, or training and education have fitted him; such as tests in writing, reading, arithmetic, drawing, etc.

As insanity is a disease of the mind, we must investigate it along lines that will bring out the mental phenomena, however, no examination of a mental disease is complete without a functional examination of the nervous system; all forms of sensibility should be investigated, as well as the special senses and the superficial and deep reflexes, but we must not overestimate the importance of the tests of the general nervous system. In a few forms of insanity they are highly important, and I might also add pathognomonic, but in general it can be said they have little weight as reliable tests of insanity.

There are many more tests of insanity which I have not mentioned or discussed, but the majority of them are of a highly scientific nature and can be carried out only in a well appointed psychological laboratory. They would not be applicable for use in the Probate Court, and it would extend the length of this paper to enter into a discussion of them.

To recaptiulate, the real criteria of insanity are: (1). His conception of the environment. (2). His emotional reaction to this conception as is manifested in his conduct. (3). The proportion between the purposes and acts on the one hand and the environment on the other. (4). The individual standards and habits of action as influenced by his education and training. (5). The voluntary choice of his thinking, feeling and acting as he does.

Finally, to sum up the whole situation of insanity in one sentence, I would state that an insane person is one who is out of harmony with his environment, as the result of his inability to feel, think and act in accordance with his bringing up.

Cleveland State Hospital.

The Clinical Value of Carbon Dioxid Snow, with Demonstration of New Ice Compression Mould.

By WALTER IRWIN LeFEVRE, M. D., Cleveland.

Only within the past few years has carbon dioxide been utilized in the treatment of disease. Its use was popularized by an American physician, Dr Pusey of Chicago, and at present it is considered indispensible in the armamentarium of the dermatologist. Commercially it has been used many years but there also its field of usefulness has expanded until today its manufacture engages the attention of the largest chemical companies.

Medicinally, besides its uses in skin lesions, it is used in giving baths. These are of two kinds, the water and the air bath. In the air bath the patient is placed in an ordinary "sweat cabinet" and the gas is introduced at the bottom, a lighted candle near the top serving as a simple indicator to show when the

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cabinet is full. The gas being heavy fills from the bottom up, so when the candle is extinguished the cabinet is full. In the water tub bath two methods are employed, a simple and cheap way is to place a cup or so of acid sulphate of soda and soda bicarbonate in the bottom of the tub; fill the tub with water and the carbon dioxid will be evolved and will collect upon the surface of the body. The other way is to introduce the gas into the bottom of the tub from the ordinary storage tank. These baths are said to be very stimulating and are used for restoring "the vigor of youth."

In dermatology carbon dioxid has proved very valuable in a number of diseases and conditions. It is easily handled, almost painless in its application and positive in its action. With it a degree of reaction can be obtained ranging from an erythema to necrosis, depending upon the pressure exerted and the length of contact. With the carbon dioxid ice a temperature of about 110° below zero is obtained, so that when the skin is touched with it there is at first a slight sting, but almost instantly the surface is frozen and hence anesthetized. Five to ten seconds is sufficient time to destroy a mole or vascular nevus. In a short time a blister forms if the skin is not broken, with more or less edema of the surrounding tissue, but unless the area treated is quite large the patient does not suffer much pain. It can be used upon any accessible part of the body.

Personally, I have found it useful in warts, moles, birthmarks (both vascular and hairy), tattoo marks, epithelioma, lupus, lupus erythematosus, lichen planus, and xanthoma palpebrarum. Others have reported good results also in keloid, keratosis, indurated eczema, chloasma, and powder stains. Its field of usefulness is growing and it has proved a valuable agent, especially in some of the conditions which have been intractable to other measures. Its chief advantage, though, over other destructive agents is in the cosmetic results obtained. It is even superior to electrolysis in this respect and is not to be compared with caustics, escharotics or surgical means.

The compression ice mould which I use is a convenient, rapid and economical method of handling carbon dioxid. It consists of a triple-barreled screw syringe, the two inner tubes are of brass, perforated with fine holes and between the two is a layer of chamois skin. The other tube is of fiber; being a non-conductor it does not become very cold. The syringe is screwed directly to the valve of the tank and the plunger is set so as to hold as much snow as is desired. The rapid evaporation of the liquid carbon dioxid produces such an intense cold that the cylinder is soon filled with the snow. This is then compressed into ice, taken out of the mould and applied directly to the part. In the compression the temperature is reduced and the ice is hard and dry so it can be fashioned into any shape with a penknife. A cone of the ice about one-half inch long will last about 15 minutes in the open air and for about 60 minutes if wrapped in chamois skin.

216 Lennox Bldg.

Treatment of Labor in Contracted Pelvis.

By E. O. HOUCK, M. D., Cleveland

The subject of this paper is a most difficult one to present briefly. To select but one or other of the methods of treatment with contracted pelvis would also prove unsatisfactory because most, if not all, of the obstetric operations may be, and are, applied within the same degree of pelvic contraction (7.5 to 9 cm. conjugata vera). The difficulties are also enhanced by reason of the position I take, that craniotomy on the living child is never a justifiable operation; that this is not unreasonable, even from a strictly professional standpoint, is supported by the opinion of such an eminent obstetrician as Pinard, and further that it is the great ideal which all obstetricians hope some day to attain. It is also pertinent to say that this paper is not an outgrowth of my own, but represents the experience from Prof. Schauta's clinic in Vienna, as published by Burger in his monograph, "The Management of Labor in Contracted Pelves." It represents, in addition, a resumé of the opinions expressed at the last meeting of the German Gynecological Congress at Dresden in May, 1907. Burger's report covers the experience gathered during the last 15 years and includes 5,288 cases of contracted pelvis with the conjugata vera 10 cm. and less. It shall be the purpose of this paper to present as briefly as possible these experiences and the lessons to be learned from them. I regret to say that from the very nature of this paper—it being more or less of a report—I shall be obliged to give numerous statistics, but I shall reduce their number to a minimum.

Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, November 5, 1909.

To me one of the greatest difficulties in studying the treatment of contracted pelvis has always been that pelves with unequal contractions of the true conjugate have been included within the same "grade" of pelvic contraction. This has been so since Michaelie first classified the various degrees of contracture, which classification Litzman later expressed in centimeters. Thus, in the first grade were included generally contracted pelves between 10 and 9 cm. C. V., and flat pelves 8.25 to 9.5 cm. The difference of the conjugate within the same grade of pelvic contracture was based upon the supposition that a generally contracted pelvis offers more difficulty for delivery than the flat pelvis. Baisch, however, has demonstrated that this view is erroneous and that, at least as far as the possibility of spontaneous birth is concerned, there is little or no difference whether the pelvis be a generally contracted or a flat one. Burger's experience (Fig. 1) substantiates this view and he therefore has divided his cases of contracted pelvis into four grades, each grade representing a difference of 1 cm.

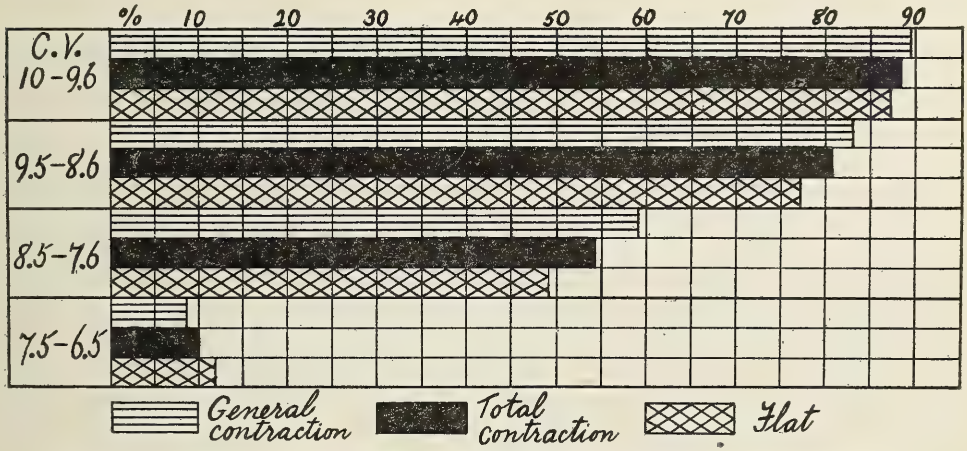

Fig. 1. Spontaneous Births in Different Grades of Contraction.

Grade 1. 10. cm. to 9.6 cm.
" 2. 9.5 cm. to 8.6 cm.
" 3. 8.5 cm. to 7.6 cm.
" 4. 7.6 cm. to 6.5 cm. and less.

The frequency with which pelvic contractures occur depends on the varying conceptions as to what a contracted pelvis is. It is perhaps safe to say that about 10% of all pelves are contracted, usually, however, only moderately so. However exact we may be in measuring the pelvis and determining its inclination, we are not always so fortunate in being able to estimate the size of the child's head or its compressibility. The relation between the head and the pelvis is perhaps best determined by Muller's method (under anesthesia) or by using the method suggested by Hirst.

The first question which naturally suggests itself in a given case of contracted pelvis is whether labor can terminate spontaneously. In Burger's 5,288 cases, 4,116, or 77.8%, were spontaneous. It is the remaining 20% to 25% which will at times tax the judgment of the most expert in order to obtain a living child and sustain the life of the patient. If the pelvis has been measured during pregnancy and we have determined that it is contracted, we should employ such means as will overcome the disproportion between the child's head and the pelvis. Vorhees recommends the restriction of the diet, frequent walks and the assistance of a tight abdominal band in order to press the head into the pelvis. When labor has set in the assistance of the Walcher position is indicated, when necessary, to overcome the slight degrees of pelvic contraction, and the patient should be advised to keep on her feet as long as possible during the first stage of labor.

The operations usually employed in the treatment of contracted pelvis may be divided into indicated operations, prophylactic operations, and so-called surgical operations. To the first named group (indicated operations) belong those measures which are indicated not so much by the contraction of the pelvis as by other anomalies of labor which, however, are mostly the result of contracted pelvis. Among these operations may be mentioned version from the transverse presentation, the extraction of the breech, the application of forceps with the head in the pelvis, craniotomy, and decapitation on the dead child. Of the indicated operations Burger employed version 353 times, when indicated because of the prolapsed cord or a transverse position or improper attitude of the head. In indicated version, 39% of the children were lost, with a maternal mortality of 0.5%. Version in primiparae gave the least satisfactory results for the fetus, whereas the most favorable results were obtained in multiparae with flat pelves. Forceps (low or mid) were applied 207 times with a fetal mortality of 11.5%, and no maternal deaths. Manual extraction was performed in breech cases 30 times with no maternal deaths. While all these indicated operations seem justified it is not improbable that one-third of these patients treated by these universal rules would have fared better by an early recognition of the contraction and intelligent management of the same.

First among the prophylactic operations may be considered the induction of premature labor. This operation was originally introduced by Wm. Cooper in 1771 to displace Cesarean section when that operation was attended with such high mortality. The comparative ease attending the induction of premature labor has for many years made this procedure popular among physicians. Its indiscriminate use in every case of contracted pelvis is greatly to be deprecated for the reason that such a large percentage of births in contracted pelves terminate spontaneously. It is rarely indicated in pelvic contracture in primiparae for in this class we do not know what the natural dynamic powers of the patients are. In multiparae it has its greatest field of usefulness in generally contracted pelves between 8 and 9 cm. C. V. and in flat pelves between 7.5 and 8.5 cm. and more especially in that class of multiparae who give a history of having given birth to a large child or a child whose head is well ossified. These children are premature only in point of birth and not development. Premature labor should further be employed only in vertex presentations. The principal objection to the induction of premature labor is the attending infantile mortality. It is estimated that not more than 33% of these premature children survive the first year of life. While it is true that when the results following the induction of premature labor are compared with results obtained in the same patients following spontaneous labor more living children will have been born after the induction of labor, yet if the same results obtained within the same degree of pelvic contracture in multiparae are compared it will be noted that there is practically no difference—in the former instance the fetal mortality is 21.7%, in the latter 20.7%, showing that, as far as the fetus is concerned, no advantage is gained by inducing labor except as above indicated for a large child.

That this operation is not a popular one in continental Europe is evident from the rarity of its employment in contracted pelvis. Burger employed it only 34 times or in 0.8% of all cases. It is the least applied of all measures employed in contracted pelvis. Kronig employed it in 0.5%, Doederlein in 0.6%, and Chrobak in 3.8% of their cases. In some of the clinics it has been abandoned entirely (Tauffer, Winter, Wolff).

Premature labor does not always mean an easy labor or even a spontaneous labor; in Burger's 34 cases version was employed 14 times because of the subsequent changing of the vertex presentation, and six times manual extraction was performed for subsequent breech presentation. The ordinary time for bringing on labor is from the thirty-fifth to the thirty-eight week, though most writers agree that this operation should be greatly restricted, and that it is better to wait the results of spontaneous delivery. Pfannensteil was of the opinion that many of the bad results from premature labor were from improper technic. He employed bougies only in primiparae with flat pelves and vertex presentations, and in multiparae with generally contracted pelves and vertex presentations. For the other cases he used the metreurynter.

The second of the prophylactic operations is prophylactic version, a procedure based upon the fact that the aftercoming head can more readily overcome pelvic contracture than the forecoming head. In this operation the distinct difference between indicated version and prophylactic version must be borne in mind. The former operation is indicated because of same malpresentation, while the latter is indicated because of the contracted pelvis per se. Following 95 prophylactic versions there was an infantile mortality of 21%, and a maternal mortality of 1.5%, which is indeed not nearly as good a result as obtained by other methods of delivery.

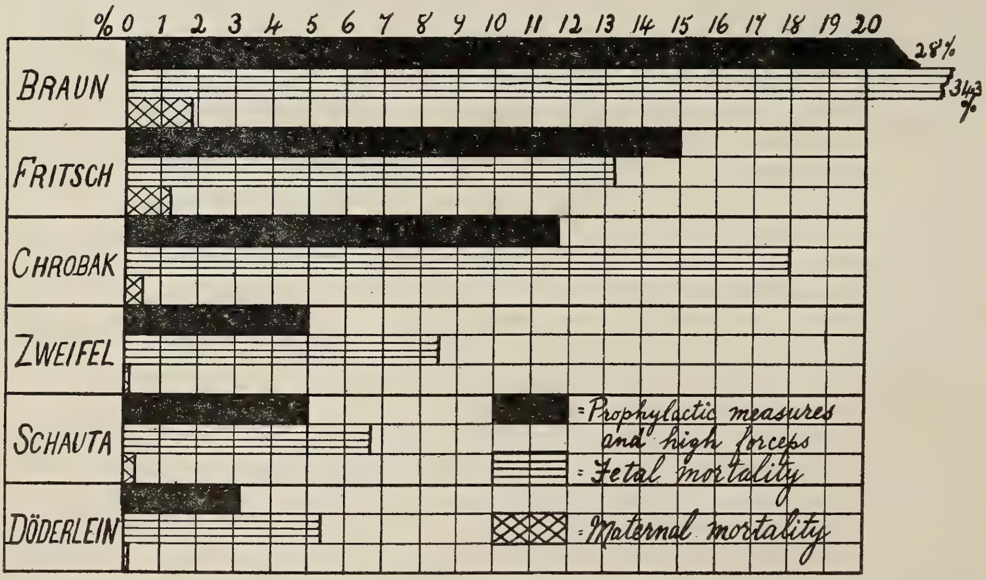

Fig. 2. Results from Prophylactic Measures in Contracted Pelvis.
(In those clinics in which prophylactic measures were least employed the mortality, both fetal and maternal, was lowest).

The usual indication given for the performance of prophylactic version is in multiparae with contracted pelves between 7.5 and 9.5 cm. C. V. when the fetal head is not too large.

Prophylactic version gives better results when performed in cases of flatly contracted pelves (18% infantile mortality) than when performed in generally contracted pelves (28% infantile mortality). It is more favorable in multiparae because of the relaxed conditions of the uterus and soft parts. In order to determine whether with this operation improved results are obtained for both mother and child, as against the expectant plan of treatment, Burger estimates the results obtained in the same class of cases (multiparae) with flat pelves, C. V. 9.5 to 8.6 cm., first by including and then excluding prophylactic version; he concludes therefrom that the expectant method of treatment gives the best results for both mother and child. Burger further confirms the opinion of Ludwig and Savor that if version is to be undertaken at all it should be done only when the conjugate is below 8 cm., for spontaneous labor offers better results above that line.

The use of high forceps in the treatment of contracted pelvis can scarcely be considered a prophylactic measure, though it is often so called in contradistinction to the strictly surgical procedures, Cesarean section and hebosteotomy. The indications for the use of high forceps can be either maternal, fetal, or both. That the use of high forceps is not very "conservative," for the sake of the child is apparent from the high fetal mortality. Burger reports 38.5% fetal mortality. Indeed the mortality is even higher (50%), when only those cases are considered in which forceps were applied because of some indication referable to the fetus.

In Burger's series high forceps were applied 147 times, in 2.7% of all cases of contracted pelvis, with a maternal mortality of 1.3%. The maternal mortality alone, however, does not give a comprehensive view of the seriousness of this procedure. Their use is often attended with severe injuries to the mother—27 cases of severe laceration of the cervix and 77 cases of extensive laceration of the vagina. Because high forceps are not adapted to overcome any great inequality between the size of the pelvis and the head, their use is contraindicated when the conjugata vera is below 7.5 cm. or even higher if the head is large. Their use should be restricted to several well-directed efforts at extraction, if the necessary requirements for their application are present—fixed head and dilated cervix. If the cervix is not already dilated it should be dilated artificially before the forceps are applied. When no advance in the head is noticed other methods of delivery should be adopted. High forceps may also be applied as a delivery operation after hebosteotomy, though when so applied the procedure is attended with much laceration of the soft parts and high fetal mortality.

We now enter upon a discussion of the strictly surgical operations in which the integrity of the mother's tissues are sacrificed in the interests of the child. First among these is Cesarean section. Just as simple as it is to define the absolute indication for this operation (C. V. 5.5 cm. and less), just as difficult is it to determine its relative indication. Since it is highly improbable that a normally devoloped child would be born at term when the C. V. is below 7 cm., within these limits this operation would hardly be said to enter into competition with hebosteotomy. Cesarean section may also be elected when the C. V. is much higher than 7 cm. (between 7 and 9.5 cm.), especially when there seems to be quite a disproportion between the size of the head and the pelvis, and the mother is very desirous of having a living child. There is a disposition on the part of many to enlarge the indications for this operation because of its favorable termination for both mother and child. However, if this mode of delivery is selected routinely when the C. V. is between 7.5 and 8.5 or even 9 cm., many unnecessary operations will be performed in cases that would otherwise terminate spontaneously. For Cesarean section to be eminently successful it is necessary that the uterus be free from infection. When performed upon an uninfected uterus and amid good surroundings the maternal mortality will average about 5%, whereas if performed by inexperienced operators and amid unsatisfactory surroundings, it will be about 10%. If performed on cases in which the presence of an infection cannot be excluded, the maternal mortality will be about 23%. In Schauta's clinic 116 Cesarean sections were performed for relative indications, in contracted pelvis (2.1% of the cases), with a maternal mortality of 3.4% and a fetal mortality of 1.7%. Cesarean section can certainly be classed as an operation which concerns the interests of the child.

Within recent years (1903) the "pelvic-enlarging' 'operations have entered upon a new era in their use in cases of contracted pelvis. While old in principle, and originally introduced to avoid what was practically a fatal Cesarean operation, they were abandoned, because of their high mortality, in favor of Cesarean section performed according to modern technic. The success of the pelvic-enlarging operations does not seem to depend so much upon whether symphysiotomy or hebosteotomy is performed as it does upon the necessity that this operation be performed subcutaneously. It is not my purpose to deal with the relative methods of these two operations or their technic, though the consensus of opinion appears to favor hebosteotomy. The indications for the two operations are the same. Their principal uses are in pelvic contraction between 7.5 and 8.5 cm. C. V., though several operations of this character were performed when the contracture was as low as 6.5 cm. C. V. Schauta does not believe they should be employed below 7 cm. C. V., because of the danger of injury to the maternal soft parts, and the additional danger to the fetus during delivery. While the lower limits of the pelvic contracture are fairly definite for the employment of hebosteotomy or symphysiotomy, the upper limits are not so easily determined, though they would be rarely indicated above 9 cm. C. V. Unlike Cesarean section the pelvic-enlarging operations can be undertaken when we are not certain that the uterus is "sterile;" I do not mean, however, that they should be undertaken when positive signs of infection are present except that it may be properly performed to avoid a perforation upon a living child. These operations, however, should be performed only after the patient has been submitted to a test of labor and when it is apparent that delivery will not take place spontaneously, or by the aid of forceps. Forceps should be employed only in the nature of a trial application, the fetus should not be subjected to repeated attempts at delivery before resorting to hebosteotomy.

Whenever possible hebosteotomy should be performed early, when both mother and fetus are in good condition, in order to avoid the necessity of immediate delivery following this operation. It may not always be possible to await spontaneous delivery; the delivery then will have to be attempted by forceps or version and manual extraction. In Schauta's clinic 23 pelvic-enlarging operations were performed (7 symphysiotomies and 16 hebosteotomies), with no maternal deaths and only one death in a child, 4.3%. While the number of operations of this character performed by Schauta are too small from which to draw conclusions, Doederlein has collected and reported 170 cases of subcutaneous hebosteotomy and 55 cases of "open" hebosteotomy from various operators with a maternal mortality of 4.1% and a fetal mortality of 4.9%. Zweifel further has collected and reported 69 subcutaneous symphysiotomies with no maternal deaths and a fetal mortality of 8.8%. Though both maternal and fetal mortality following hebosteotomy were favorable, numerous complications following hebosteotomy were reported, in point of severity there were severe injuries to the bladder 25 times, alarming hemorrhage, severe tears to the vagina, failure of union of the bones, thrombosis, and embolism.

In Doederlein's report it is noteworthy that 18 of the 25 cases with bladder complications were operated upon subcutaneously, most frequently by inserting the needle from below upward. The hemorrhage, mostly venous, arose largely from severing the corpus cavernosum. Severe laceration of the vagina often attended forceps and manual extraction. While it was the general opinion at Dresden (1907) that subcutaneous pelvic-enlarging operations would occupy a permanent place in obstetric surgery it was felt that more experience must be gained to establish a generally accepted technic which would eliminate many of the complications of this operation. The pelvic-enlarging operations have had a most salutary influence upon the practise of craniotomy upon living children. That the expectant method of treatment of labor in contracted pelvis and the restriction of the prophylactic measures does not increase the frequency of this operation, even among those who recognize it as a legitimate operation, is apparent from Burger's statistics. It was performed in Schauta's clinic 76 times or in 1.4% of the cases, whereas in Fritsch's clinic, where the prophylactic measures are more frequently employed, it occurred in 2.5% of the cases. Though craniotomy on the living child is performed solely to conserve the interests of the mother, it entails an average mortality of 10%.

The performance of craniotomy on the living child will be still further restricted by the employment of extraperitoneal Cesarean section, even in those cases which exhibit textbook indications for the performance of the former, e. g., known infection of the uterus, high fever, and impending danger of rupture of the uterus, when a classical section cannot be done. Craniotomy and decapitation upon a dead child is always a justifiable operation and should be undertaken when the indication arises for its performance. Care should be exercised, however, to determine that death has really taken place by employing direct auscultation of the abdomen.

CONCLUSIONS.

The treatment of labor in cases of contracted pelvis may be summed up as follows:

C. V. 5.5 cm. or less: Absolute indication for Cesarean section.

C. V. 5.5 cm. and upwards: Craniotomy on the dead fetus.

C. V. 5.5 to 6.5 cm.: Cesarean section for relative indication when the fetus is still living.

C. V. 6.5 to 7.5 cm.: Hebosteotomy only with an uncomplicated vertex presentation, small head with good flexion, and a living child.

C. V. 6.5 to 7.5 cm.: Cesarean section for breech presentations, oblique presentations, and in vertex presentations when it is necessary to deliver rapidly, or when the mother is very desirous of having a living child. The uterus must not be infected. Hebosteotomy may be done before the os is dilated if we are reasonably certain of a small head. If the membranes are not ruptured it is better to wait until the os is completely dilated before doing the operation; if the membranes have ruptured then do a hebosteotomy as early as possible so the head can descend. Do not use a dilating bag because it might cause a deflection of the head. (Schauta does not believe that hebosteotomy should be performed below 7 cm. C. V.).

C. V. 7.5 cm. and upwards: Always endeavor to bring about spontaneous labor and only when during the course of labor we are convinced that spontaneous delivery cannot take place, do hebosteotomy if the child is living and the head is not too large.

C. V. 7.5 to 8 cm.: Do hebosteotomy if the child is living and follow this by version and extraction: A. In oblique presentations. B. In head presentations with prolapse of the cord. C. In breech presentations.

C. V. 7.5 to *8 cm.:* In a multipara with a small child version may be attempted without previous hebosteotomy.

C. V. 8 cm. and upwards: Await spontaneous delivery. Version for indicated reason. Application of the forceps with complete dilation of the cervix. Forceps should be applied as a trial operation when, if not successful, hebosteotomy is indicated. Always endeavor to wait for spontaneous delivery after performing hebosteotomy.

C. V. 8 cm. and upwards: In multiparae induce labor if the mother gives a history of having previously given birth to large children; do not permit the mother to go overtime even when awaiting the onset of labor pains and spontaneous delivery.

C. V. 8.5 cm. and upwards: Forceps, version if indicated, hebeosteotomy.

operations were performed (7 symphysiotomies and 1* heboste-

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Vaccine Therapy in Chronic Otitis Media.

By P. A. JACOBS, M. D., Cleveland.

The application of bacterial vaccines as therapeutic agents in chronic suppurative conditions of the middle ear, gives to the otologist a new weapon with which to combat this most important disease.

Before taking up this method of treatment a bacteriologic examination of the discharge must be made; in this connection I wish to emphasize that both a smear preparation and culture are necesary, and should be repeated as it becomes necesary during the course of treatment.

The vaccines employed in these patients were prepared after the method used in Wright's labratory, in the folowing manner. The offending organisms were grown on solid culture media and in pure culture, not longer than 24 hours, they were then washed off with a physiologic salt solution, standardized, and placed in the water bath at a temperature of 60°C. for one hour to bring about the death of the organism; after sterilization, a portion was transplanted to some culture media and placed in the incubator for 24 hours. If a growth takes place within that time our vaccine is not free from living bacteria and therefore requires resterilization. As a rule, however, a second sterilization is not necessary as all pathogenic bacteria that are not spore producers will be killed during the first sterilization.

The phenomena that take place as a result of an inoculation of a bacterial vaccine, depend on the size of the dose, the intervals at which it is given, and the potency of the vaccine, and can be observed from either a laboratory or a clinical viewpoint. By laboratory observation I mean the estimation of the opsonic index before and at various intervals after an inoculation of an appropriate vaccine.

Read before the Ophthalmological and Oto-Laryngological Section of the Academy of Medicine of Cleveland, November 26, 1909.

From a clinical standpoint, the following will be noticed. Within 24 or 48 hours after an inoculation, all the symptoms that were present will become aggravated, and in addition symptoms that were not present may appear; among these may be mentioned headache, dizziness, sleeplessness, peculiar noises and pain in the ear or the mastoid. This stage which corresponds to the negative phase, may last a few hours or a few days, depending on the size of the dose. If, however, the dose be small, the negative phase may be very slight and not noticed clinically. When this stage subsides, improvement in the symptoms will be noticed. This improvement corresponds to the positive phase, which lasts from one to 10 and sometimes as long as 14 days. When the end of the positive phase is reached, we notice that the patient's condition is either at a standstill or the symptoms that were present are reappearing. This indicates a dropping of the positive phase, and the time for reinoculation.

While the number of cases that I have to report are not many yet they are of interest because they were cases that did not improve under the regular treatment within a reasonable period of time.

Case 1. Mr. A. S., aged 39, occupation designer, gave the following history: During the early part of November, 1908, the patient was taken ill and the family physician diagnosed la grippe. On Nov. 19, 1908, Dr J. N. Lenker was called in consultation and incised the drum after making a diagnosis of acute otitis media. On Nov. 28 he performed a mastoid operation, and found all the cells involved. On Dec. 9 the patient left the hospital with a discharge from the ear and mastoid wound. A short time after, while in New York, the patient called on an eminent otologist who advised an immediate radical operation; this the patient refused and returned to Cleveland, the ear and mastoid wound still discharging.

On March 20, 1909, he was referred to me by Dr Lenker and a culture was made of the discharge from the ear and mastoid wound.. The culture from the ear showed, on March 21, many colonies of *Staphylococcus aureus* and a few colonies of *Streptococcus pyogenes*. The culture from the wound showed *Staphylococcus aureus.*

On March 22, vaccines were prepared and on March 23, the patient was inoculated with 200,000,000 staphylococci.

March 25, discharge increased a little the day before and decreased towards evening, patient felt better, mastoid wound healing.

March 30, mastoid wound healed, very little discharge from the ear. Slide preparation from ear showed staphylococci and streptococci. Patient inoculated with 100,000,000 staphylococci.

April 2, very little discharge, which was not as thick as it had been. Slide preparation showed few staphylococci and numerous streptococci.

Patient inoculated with 100,000,000 staphylococci and 2,000,000 streptococci.

April 9, discharge increased on the evening of April 6; it then began to diminish and had not discharged for last two days. On this day the drum looked well and had a very small opening.

April 13, patient inoculated with 100,000,000 staphylococci and 2,000,000 streptococci

April 17, no discharge since April 7, no clinical negative phase as a result of the last inoculation. Patient discharged as cured.

May 19, patient going abroad, returned for a prophylactic inoculation and was given 100,000,000 staphylococci and 2,000,000 streptococci.

In this case, owing to the few colonies that grew on the culture media. I thought that the streptococci were not producing any trouble and therefore decided to withhold their use up to such time as it became evident that they were helping to keep up the condition; so that after one inoculation of a streptococcus vaccine, the discharge promptly ceased; which proved that they were a factor in the case.

In a communication a few days ago, the patient informed me that he has returned from abroad, that his hearing is good, and that he has been free from any symptoms since the discharge stopped on April 7, 1909.

Case 2. A. E. S., aged 10, male, referred by Dr J. N. Lenker, gave the following history: Mastoid operation performed Nov. 5, 1908, wound healed but the discharge from the ear continued.

On April 27, 1909, discharge from ear had an offensive odor; a culture was made which, on April 30, proved to be *Bacillus coli.* On May 2, a vaccine was prepared and on May 3, patient was inoculated with 2,000,000 colon bacilli.

May 5, there was no clinical negative phase, much less discharge, and very little odor.

May 7, the discharge had increased; patient was inoculated with 5,000,000 colon bacilli.

May 15, no improvement since last inoculation, patient inoculated with 2,500,000 colon bacilli.

May 18, less discharge; Dr Lenker removed some granulations.

This case discontinued treatment for some unknown reason after three inoculations; some improvement, however, in the amount of the discharge was noticed. This case is especially interesting as the infection was due to the colon bacillus which is not a very common offender in diseases of the middle ear.

Altogether six cases have received vaccine treatment with the following results: cured, two; improved, four; unimproved, none; treatment discontinued, one; still under treatment, three.

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A Case of Suspension of the Uterus Followed by Two Normal Deliveries and the Findings at a Subsequent Abdominal Section

By HUNTER ROBB, M. D.,

Prof. of Gynecology, Western Reserve University and Gynecologist to Lakeside Hospital, Cleveland.

The possible efficiency of suspension of the uterus to the anterior abdominal wall for retrodisplacement was recently illustrated in the case of a patient who has been under my care for several years.

Mrs. M., aged 38, first came to me for the repair of a badly torn cervix and a relaxed outlet following her first confinement. The labor had been instrumental and the child was born dead. When I first examined her the uterus was forwards, somewhat enlarged and movable; the lateral structures were free.

A year and a half later the patient returned to me on account of sharp pains in the right side of the pelvis. She also complained of backache and headache just before and during her menstrual periods. Conception had not taken place since her former visit.

The vaginal examination now showed that the outlet was in good condition. The cervix pointed upwards. The uterus was back in the pelvis, small, and could not be readily made out. An examination under anesthesia was advised, to be followed by an abdominal section if necessary. At the operation the uterus was found in a position of marked retroflexion, but free from adhesions. The right tube and ovary, being adherent, were removed. The appendix was also removed, and the uterus was suspended to the anterior abdominal wall by two silk sutures after Kelly's method.

Mrs. M. came under my care again about four and one-half years later. Her general health had been good, menstruation regular and but slightly painful. She had given birth to two children—the first two and one-half years, the second seven weeks, prior to her admission to the Lakeside Hospital. There was no difficulty experienced with the mechanism of parturition in either labor. Her last delivery had been followed by a somewhat severe pelvic infection for which her physician sent her to me.

Read before the Lakeside Hospital Medical Society, February 24, 1909.

On examination under anesthesia the uterus was found sagging somewhat in the pelvis. It was enlarged and the fundus was forwards. It was interesting to note that after gently pushing the fundus back in the pelvis and thus producing a marked angle of flexion posteriorly, the uterus would return to its anterior position in the pelvis in 20 seconds.

When the abdomen was reopened for the relief of the pelvic inflammatory condition, the uterus was found held in its forward position by a rounded ligament—2.5 mm. in diameter and 2.5 cm. long—the result of the previous suspension. In this connection I would call attention to the small size of the suspension ligament as mentioned above. It would seem reasonable to assume that with the development of the pregnant uterus, the ligament must have been stretched out to a considerable extent, and if this was the case the ligament must have diminished in size with the involution of the uterus. After the removal of the adherent and infected tube and ovary, the patient recovered her health after a prolonged and somewhat stormy convalescence.

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The Coagulation of Blood.

By W. H. HOWELL, M. D.,
Prof. of Physiology, Johns Hopkins University, Baltimore.

(Continued from the January issue.)

Nature of the action of thrombin upon fibrinogen. Under the influence of the ferment theory of coagulation it has been supposed that the fibrin is formed wholly from the fibrinogen. It has been assumed either that the atoms in the molecule of the fibrinogen undergo a rearrangement of some kind, or that the molecules or group of molecules undergo a process of aggregation, or according to the more general view the fibrinogen is split by a process of hydrolytic cleavage with the formation of an insoluble portion, the fibrin which precipitates, and a soluble portion, fibrin globulin, which remains in solution. According to the latter view there should be some quantitative relationship between the amount of fibrin globulin or serum globulin in the serum and the fibrinogen or the fibrin, but no such relationship has been shown. The evidence presented by Rettger which shows that the thrombin participates quantitatively in the production of fibrin suggests on the contrary that the two substances, fibrinogen and thrombin, unite to form fibrin. That such a combination occurs is supported experimentally by the fact that thrombin can always be extracted in quantity from fresh fibrin. When freshly precipitated fibrin is thoroughly washed to rid it of the adherent serum and is then digested for a time in dilute saline solutions the fibrin dissolves more or less completely and the resulting solution is rich in thrombin. The same result is reached (Rettger) if the fibrin after washing is allowed to undergo putrefactive decomposition. From the standpoint of experimental evidence there is certainly more reason for believing that the thrombin takes part in the formation of the fibrin than for the usual view that it simply plays the rôle of a ferment. If we accept this view the question arises whether or not the union between fibrinogen and thrombin is of the nature of a chemical combination or whether perhaps it is a looser physical union such as is recognized at present under the general head of adsorption. Nolf in his numerous publications has insisted that the deposition of fibrin in coagulating blood is simply the mutual precipitation of several colloids by physical combination. Reactions of this kind are known for colloidal substances and we have in the animal body an interesting example in the well known tendency of the protamins to cause precipitation of the other soluble proteins. The view that the thrombin precipitates fibrinogen from its solutions by forming with it a physico-chemical combination is supported in the first place by the facts described above in regard to the ease with which the thrombin may be split off from fibrin by digestion with saline liquids or by putrefaction. It finds some confirmation also in the results of experiments made to determine the effect of temperature upon the action of thrombin. Two observers who have studied this relationship (Mellanby-Rettger) agree in stating that within a certain large range (17° to 52° C.) temperature has practically no influence upon the action of fully formed thrombin upon fibrinogen. Clotting takes place as quickly at 17° C. as at 40° C. If the union of thrombin and fibrinogen is a chemical one we should expect that the process would be much accelerated by an increase in temperature, and that in accordance with the law of van't Hoff the temperature coefficient would be two or more. That is to say with a rise of 10° C. in temperature the velocity of the reaction would be increased twofold or more. As a matter of fact, within the limits of temperature mentioned, a rise of 10° C. causes no change at all in velocity; the temperature coefficient is unity and from this standpoint the reaction falls under the head of the physical rather than the chemical processes. We may conclude, I believe, that the balance of evidence at present supports the two generalizations advocated here: first, that fibrin is normally produced by the action of thrombin on fibrinogen, and second, that this action is not a fermentation but a physico-chemical combination, both elements being found in the resulting fibrin. Everyone agrees that the fibrinogen is present in the circulating blood, and practically everyone agrees that thrombin does not exist as such in the normal blood but is formed after shedding. Most investigators in recent years have therefore attempted to solve the problem of the origin of the thrombin, which carries with it an answer to the two questions, why does blood remain fluid in the blood-vessels and why does it clot as soon as it is shed?

Origin of the thrombin. On this point many different views have been expressed. With the exception of Schmidt all investigators admit that the calcium salts of the blood take a part in its production. Schmidt denied the specific influence of calcium salts, maintaining that the effect of oxalates in keeping the blood from coagulation is due not to the precipitation of calcium but to the inhibitory influence of the oxalate. I may say in passing that this objection by Schmidt is answered satisfactorily by the simple experiment of dialysing an oxalated plasma through a collodion membrane against a solution of sodium chlorid, 0.9 percent. By this means all of the oxalate is removed from the blood except what is present as insoluble calcium oxalate. Nevertheless it does not clot spontaneously no matter how long it stands, unless some soluble calcium salt is added to it. Starting with this satisfactory bit of positive knowledge some observers have been content with the simplest possible hypothesis, namely that after the shedding of the blood or after its exposure to any abnormal environment a substance is produced from the formed elements of blood—the leucocytes and plates for example—either by secretion or by disintegration and solution which may be designated as prothrombin, and this prothrombin under the influence of calcium, probably by combination with it, is converted to active thrombin which then precipitates the fibrinogen. There are, however, certain facts known which seem to make this theory insufficient, the striking influence for example of tissue extracts upon the coagulation of blood. Arthus has shown that blood which trickles for a moment or two over the surface of a wound clots much more rapidly than blood from the same animal caught in clean tubes without contact with the wound.

One may explain this fact in two ways; by assuming that the wounded tissues give a substance to the blood which accelerates the conversion of prothrombin to thrombin, that is a substance of the nature known as zymoplastic or thromboplastic, or one may asume with Arthus that contact with the tissues acts by stimulating the process of secretion of prothrombin on the part of the leucocytes (and plates). This general phenomenon becomes much more important when we study the blood of the lower vertebrates, birds, reptiles and fishes. Delezenne has called attention to the fact that if bird's blood is caught in clean tubes without contact with the tisues it remains unclotted for a long time, many days perhaps. If, however, it comes in contact with the tissues, or if an extract of the tissues is added to it, clotting occurs in a few minutes. Many years ago (1884) I called attention to the same facts in regard to the terrapin's blood. Under normal conditions the blood of this animal as it flows from a wound clots quite rapidly. If, however, it is caught through a clean oiled cannula inserted carefully into an artery and the blood is allowed to flow into clean tubes, preferably tubes lined with vaseline and surrounded by ice, the blood does not clot. If it is centrifugalized and the clear yellow plasma is siphoned off it will remain unclotted indefinitely, but addition of tissue extract at any time will bring on a coagulation in a few minutes. What bearing do these facts have upon our theory of coagulation? The answer that has apparently proved most satisfactory is found in the hypotheses published by Fuld and by Morawitz, hypotheses which are practically identical except as regards the nomenclature employed. Using the nomenclature proposed by Morawitz the theory assumes that the tissues give off an organic activator, that is, a kinase, which in combination with calcium is essential for the conversion of prothrombin to thrombin. Carrying this hypothesis over to the blood it is assumed that a similar kinase, here designated as thrombokinase, is furnished by the cells of the blood, especially the leucocytes or the leucocytes and the plates, and it is this activator which initiates the clotting of blood. The prevalent theory of coagulation may be expressed in this way. Blood contains normally a substance from which thrombin may be formed and which may be designated as prothrombin, it contains also calcium and fibrinogen but kinase is lacking, hence it does not clot. When removed from its normal environment the leucocytes and plates by secretion or distintegration give off this kinase, and a similar kinase may be furnished by the tissues. The kinase and calcium together convert the prothrombin to thrombin and coagulation of the fibrinogen results. In considering this theory one asks first of all whether the proof of the existence of a kinase is altogether satisfactory. From the results of observations made in my laboratory by Dr Rettger and others I have been forced to take a sceptical attitude toward the existence of this substance, considered as a definite chemical agent. In this case, as in so many others in physiology and medicine, definite substances have been assumed to exist to explain certain reactions, although no independent proof is furnished by isolating these bodies in a state of even approximate purity. The fact that an extract of a ground up tissue accelerates the clotting of blood is no proof that its action is due to a definite chemical substance with a specific action, unless it is followed up by some method of isolating this substance. The effects of such extracts may be due, for example, to physical causes rather than to a special organic activator. If we take the uncoagulated and cell-free plasma of the bird or terrapin it can be made to clot otherwise than by the addition of tissue extracts. Experience shows in fact that such plasmas may be clotted by a variety of methods. A little dust, a little powdered chalk, a few drops of milk, or a few drops of an emulsion of olive oil will induce a firm clot in a very short time, or in fact the addition of pure water, in the case of terrapin's plasma an equal bulk or less, will produce coagulation. Some of these influences seem to have a purely physical effect, for example the addition of dust particles, chalk powder, or oil emulsions, and suggest at once the view that such particles by purely physical forces become what Nolf calls centers of precipitation. One may ask whether the action of tissue extracts which as a rule show marked turbidity may not involve a similar factor. Certainly in view of these facts one may hesitate to accept without further proof the existence of kinases as chemical individuals with a specific influence. Direct experiments made by Rettger under conditions that may be controlled give further evidence against the kinase hypothesis. His experiments were made with solutions of pure fibrinogen which, according to the theory under discussion, should clot upon the addition of prothrombin, calcium and kinase. It was found in the first place that when the tissues were first carefully washed to remove the blood the extracts made from them, with or without the addition of calcium, did not make the fibrinogen clot. This experiment would indicate that the tissues do not contain, as some authors have supposed, anything resembling a thrombin or coagulin. This conclusion is substantiated further by experiments made in my laboratory by Messrs. Gorham and Morrison. In these experiments it was shown that fibrinogen dissolved in Locke's solution may be perfused for hours through a beating heart without undergoing coagulation, although addition of thrombin caused the solution to clot within a few minutes. Moreover these observers have shown that blood plasma from which the calcium had been removed by oxalate, and from which the excess of oxalate in turn was removed by dialysis, may be circulated through the living heart during four hours without any sign of clotting, although addition of a little calcium chlorid before or after perfusion caused the formation of a firm clot within a few minutes. In Rettger's experiments he attempted to supply the pure fibrinogen solution not only with calcium and with an extract of washed tissue but in addition with a solution of prothrombin. For this purpose normal blood was allowed to flow from an artery directly into alcohol. The precipitate after drying was extracted with water as in the preparation of thrombin from serum. If prothrombin occurs in the normal blood it would seem probable that the aqueous extracts prepared in this way should contain some of this substance. As a matter of fact such extracts when added to solutions of fibrinogen together with calcium and extract of the washed tissue did not cause clotting. So far as these experiments go, therefore, they fail to support the view that the tissues contain a thrombin, a coagulin, or a specific kinase. With regard to the kinase theory of clotting we may claim justly, I believe, that it is not proved and that the whole hypothesis of thrombokinases is premature. It introduces two unknown and unproved elements into the theory of coagulation where only one existed before. If we must have a provisional theory of coagulation it would seem to be wiser to construct one with as few assumptions as possible. We can say with some positiveness that fibrin is formed by the action of thrombin on fibrinogen; we can add to this the further facts that thrombin does not exist in the normal blood and that calcium is necessary for its production. As an assumption we may complete the theory by supposing that the calcium acts upon an antecedent substance or substances which may be designated provisionally as prothrombin. It is to be borne in mind, however, that prothrombin has not yet been isolated. Previous experiments which have claimed to prove its existence rest under the suspicion that the fibrinogen solutions used were not pure.

What is the initial cause of the clotting of blood, and why does the blood remain fluid in the blood-vessels? Most of the theories of coagulation assume that some one factor in the process is not present in normal blood but is formed after shedding. In recent theories this missing factor is either the prothrombin or a kinase, and the cells of the blood, particularly the leucocytes or the plates, are supposed to furnish it when they are brought into an abnormal environment. It is, however, an interesting fact that some of the investigators who have given especial attention to the experimental study of coagulation have been forced to assume that all of the factors concerned in the process are present ready formed in the blood, and that the initial cause of coagulation is found in a change of conditions, or in the removal of restraining influences rather than in the production of some new substance. Schmidt states specifically that in his opinion the blood plasma contains preformed everything that belongs to the process of coagulation, even the thrombin itself, but the interaction of these factors is very slow, and, after the shedding of blood, is in some way accelerated by an impulse received from the disintegrating leucocytes. Starting from the same general assumption that the normal blood contains all the necessary fibrin factors, a more explicit explanation of clotting is stated in the theory of Nolf. According to this obsrver the formation of fibrin is a normal process constantly taking place in the blood and important as a preparatory step in the nutrition of the cells. Just as casein is first precipitated and then digested by trypsin, according to Pawlow's view, so fibrinogen is first precipitated as fibrin by union with thrombozym and thrombogen, the precipitate occurring in a fine membrane upon the leucocytes and endothelial cells. This fibrin is then hydrolyzed by the further action of the thrombozym which is essentially a proteolytic enzyme. In the circulating blood his three essential factors (fibrinogen, thrombogen and thrombozym) and the four accessory factors (calcium, thromboplastic substances antithrombin and antifibrinolysin) are all present. That the blood does not coagulate in mass as it does when shed is due in his opinion to the fact that the cells of the blood and tissues are covered normally with an ultramicroscopic layer of fibrin which forms a neutral wall—like a paraffined surface—that has no thromboplastic effect upon the plasma or lymph. Whether or not one accepts all the speculative details of Nolf's theory, it is certainly a matter of first importance to ascertain whether the blood contains its factors of coagulation in solution in the plasma, or whether one or more of these arise, after shedding, from the blood cells or tissue cells or other extrinsic source. Terrapin's blood offers a most convenient material for such studies. Under proper conditions its coagulation can be delayed apparently indefinitely. In preparing what he believed to be a cell-free plasma Schmidt made use of cooled horse blood which was subsequently filtered at a temperature of 0° to 0.5° C. I have carried out similar experiments on terrapin's blood. The blood was collected through a cannula and tube moistened with fine watch oil, and it was allowed to flow into vaselined tubes packed in crushed ice. These tubes were then centrifugalized while surrounded by ice and the plasma was siphoned into cooled tubes and filtered through several layers of filter paper in a funnel packed in ice. The object of these precautions was to obtain a plasma free from cells, and during the process to prevent disintegration of any of the formed elements. The plasma so obtained does not coagulate even after weeks if kept in clean tubes, although at the meniscus where some evaporation occurs a slight pellicle may form. As a matter of fact the continual maintenance of a low temperature during the preparation of the plasma does not seem to be essential to the obtaining of a noncoagulating plasma. Blood caught through an oiled cannula into a clean tube will furnish a plasma after centrifugalization which seems not to clot spontaneously. If the plasma after centrifugalizing is not removed but is left in contact with the layer of corpuscles it clots with great slowness, requiring one or several days—a fact which indicates the difficulty with which the cells of this blood give off any substance that may affect the clotting. When the terrapin's plasma is obtained with all the precautions mentioned above it is fair to assume that it contains no cells and that none of its cells have undergone disintegration during the process of preparation, or in other words, that it represents perfectly normal plasma. The fact that such plasmas do not clot spontaneously would seem at first to indicate that some factor of coagulation is lacking and would lead us to the inference that normal plasma remains fluid because some essential factor in the process is missing, a view which, as has been stated, is the current belief in physiology. But unfortunately for this argument it is found that this non-coagulating plasma may be made to clot readily not only by the addition of tissue extracts, but also by suspending in it sundry small particles such as powdered chalk or even by simple dilution with water. If addition of water or insoluble particles makes such a plasma clot then it would seem evident that all the factors necessary to clotting are present in the normal blood, and it becomes difficult to understand how clotting is prevented in the circulating blood. One naturally thinks of an antithrombin as perhaps a sufficient explanation, and indeed this hypothesis has been proposed. It seems to me, however, very unwise to postulate the existence of a definite antibody on such indirect evidence as this. While many observers have admitted that an antithrombin may exist normally in the blood there is little or no corroborative proof for the presence of such a body. If in the present case the fluidity of the plasma was due to the action of an antibody one would not suppose that the equilibrium between it and the thrombin would be destroyed by mere dilution with water, unless one made a subsidiary hypothesis that dilution weakened the antithrombin more than the thrombin. If instead of diluting the plasma with water one dilutes it with a solution of sodium chlorid 0.9 percent no clotting occurs, however far the dilution is carried. Judged from this fact alone the restraining influence present in the plasma might be traced to the concentration in sodium chlorid rather than to the action of an antibody. Instead, therefore, of explaining the fluidity of the normal plasma by assuming the existence of a special substance and giving it the definite name of antithrombin, it would be a wiser thing for future work to content ourselves with the more general expression that in the normal plasma restraining or inhibitory influences are at work which prevent the interaction of the fibrin factors, although these may all be present in solution. While this inhibitory influence may prove to be an antithrombin it seems more likely that it is some condition which prevents the formation of thrombin from a prothrombin stage, and that tissue juices, the products of leucocytic disintegration and other accelerating or zymoplastic substances act indirectly by interfering with the existing equilibrium, rather than by adding a new factor which takes a direct part in the processes of coagulation.

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EDITORIAL

The Parathyroid Gland.

In the nineteen years that have passed since Cley rediscovered the parathyroid bodies, we have had the rather unusual medical opportunity of seeing this gland pass from the least known to one of the best known of the so-called ductless glands. This result has been accomplished by means of the accessible and attractive field which it offered to investigators in pathology, physiology and biochemistry. Attacked from so many angles, controversies were inevitable. One of the first of these controversies was concerned with the relationship of the parathyroid to the thyroid and its (parathyroid) necessity in maintaining life.

With the exception of two English observers, Vincent and Forsythe, the opinion is unanimous that these bodies are absolutely independent of the thyroid as regards structure, compensatory hypertrophy or any active relation to goitrous changes. The physiological differences between these two glands are still more sharply drawn than the anatomical differences. Total extirpation of the thyroid leads to a prolonged malnutrition designated by Kocher as cachexia strumipriva, while total extirpation of the parathyroid gland leads to an acute symptom-complex ending fatally, as a rule, in from one to ten days and spoken of as *tetany* for the reason that muscular twitching and spasms (tetany) were the most manifest symptoms.

Through this clinical analogy many observers have sought to establish a relationship between parathyroid tetany and such diseases as the rhachitic carpopedal spasm, gastric tetany, paralysis agitans, myasthenia gravis, etc., although the anatomical proof of such relationship is absent.

J. V. Cooke (*Jour. Exp. Med.* 1910, XII, 45) has called attention to the fact that the tetany is but a symptom and perhaps only a minor symptom of the profound, general, nutritional disturbance. The other striking symptoms following parathyroid extirpation in dogs are tachycardia, tachypnea, profuse salivation, gastric and duodenal dilatation and fever.

In 1908 MacCallum announced that the administration of calcium salts to dogs with parathyroid tetany completely relieved the symptoms and that life in such animals could be indefinitely prolonged by their use. Quantitative calcium determinations which Voegtlin and MacCallum made (*Jour. Exp. Med.* 1909, XI, 118) on a series of tetany dogs seemed to show that calcium was diminished in the tissues of parathyroidectomized dogs, especially in the central nervous system, and from this they concluded that the parathyroids had to do with the metabolism and economy of calcium in the organism. Beebe later found that salts of the other metals of this group (strontium, magnesium and barium) seemed to have an action similar to calcium in relieving the symptoms although to a much less marked degree. Their toxic action is so marked, however, that other observers have not been able to clearly distinguish any action of relief of the tetany symptoms.

As to the mechanism of the calcium effect little is known. The recent work of Cooke indicates that the administration of calcium salts does not relieve the tetany by compensating for an increased excretion as was believed by MacCallum and Voegtlin. Cooke was unable to confirm this work either as to the increased urinary excretion of calcium or as to the decreased calcium content of the brain tissue. The very striking fact brought out by Cooke is the great increase in the magnesium excretion which begins *before* tetany is observed and continues throughout the remaining days of life, while the calcium excretion remains constant.

The metabolic disturbances following parathyroid removal undoubtedly have to do with disturbed chemical relations within the organism. Some investigators have assumed an acid intoxication in order to explain the observed phenomena. They suggest that the intermediate acid products of protein catalysis, which the body normally is able to further oxidize by the aid of the parathyroid secretion, are in tetany combined with ammonia and the basic metals and eliminated. This would account for the greatly increased ammonia and basic metal excretion and suggest a theoretical possibility that the marked nervous phenomena are due to disturbances in the salt equilibrium of the nerve cells induced by the above named processes. D. M.

Grafting and Reimplantation of Bone.

In the Jubilee Number of the *Annals of Surgery* for December, 1909, among many excellent papers, one of notable interest is that of Sir Wm. MacEwen on Intrahuman Bone Grafting and Reimplantation of Bone. He reports several cases illustrating bone grafting in various parts of the body but the most striking one is that of a patient in whom the greater part of the shaft of the humerus was restored by intrahuman transplantation of bone done 30 years ago. As the boy who was then operated on is now a man in regular employment, the details of the case with the final results make the report of great interest.

The patient was operated on in 1878 at the age of three years for a badly neglected osteomyelitis of the right humerus, from which the sequestrum removed comprised the whole human diaphysis. The periosteal tunnel left by the withdrawal of the sequestrum gradually coalesced without the formation of new bone except for a short distance from the head of the humerus, where about an inch and one-half of shaft had formed three months after the removal of the dead shaft. This left the patient with a flail-like arm which the parents, 15 months later, declared was worse than useless, inasmuch as it required the use of the good arm and hand to look after the flail-like one which was constantly dangling loose at the patient's side and they, therefore, requested that the useless arm be amputated.

MacEwen operated on this boy three times at intervals of a little over two months, transplanting in a sulcus made between the muscles minute fragments of bone, obtained by cutting up with the chisel wedges of tibiae removed during operations for bow-legs. These grafts, proliferated, grew to one another and also to the extremity of the proximal portion and the patient left the hospital with the utility of the arm greatly restored.

It is to be noted that the periosteum played no part in the bone reproduction after transplantation in this case, as the periosteum was not transplanted along with the bone.

Thirty years after the original operation the patient presents himself with the new humerus only three inches shorter than the other side, having worked as a joiner and patternmaker for many years.

This case is but one of many subsequent cases in which bone grafting, transplantation and reimplantation of bone have been successfully practised, but taken together with the recent advances in the transplantation and repair of blood-vessels and nerves and repair of ankylosed joints, it serves to illustrate the really wonderful achievements of modern surgery and to give rise to a pardonable thrill of pride in the breasts of all medical men for the attainments of this branch of our profession. R. H. B.

Medical Examination of School Children in England.

Although for some years the need of laws stimulating the better health of school children had been receiving increasing attention, it was not until 1906 that any special legislation was brought forward to this end. The first step taken was to enable the local educational authorities to provide necessitous children with food so that they could get more profit from their school work. The next year a clause was inserted in the Education Bill providing for the medical inspection of the children at or about the time of admission, and on such other occasions as the Board of Education might direct, and in addition permitting of any arrangement for keeping up the health and physical condition of these children, which might be sanctioned by the Board. This last section obviously gives power for the actual *treatment* of such cases as appear to need it. The Act went into operation at the end of 1907, and the first Annual Report of the Chief Medical Officer of the Board of Education, dealing with the working of the Act in 1908, has just been issued.

Certain modifications in the shape of memoranda by the Board (which are considered to be equally binding with the original Act), have been made, so that the present intention of the Board may be summarized as follows:

Children entering the elementary schools, which correspond to our common schools, become subject to a series of physical examinations of which one comes at the time of admission, one at dismissal, and two in the interval. Of these the first, to be made this coming August for the first time, concerns all children reaching their seventh year, and the other, to be begun probably next year, all children reaching the tenth year. The seventh year period is selected because at this time the children are supposed to be able to read, so that their eyes can be tested, and their mental capacity can be more correctly ascertained than earlier.

For the proper understanding of the methods of carrying out this legislation it is necessary to enter somewhat into the administration of public health in England.

The various phases of hygiene come under three authorities, of which the Board of Education is concerned with the general health of the child, chiefly in relation to its efficiency as a student, the Local Sanitary Authorities with the general hygiene of the district and with the *school* child only in so far as through contagious diseases it is apt to become a factor in epidemics, and the Poor Law Authorities with the health and welfare of the district paupers. All three of these are in the main independent of each other though in many cases their work must be coordinated, and all are ultimately responsible to the Local Governing Boards of which there is one for each section of Great Britain.

The representative of the Board of Education is the School Medical Officer, that of the Local Sanitary Authority is the Medical Officer of Health. In each case the methods of appointment and the location of the responsibility depend somewhat on the population and topography of the district, but the ultimate results are expected to be the same. In most of the towns and closely populated areas there is a very marked tendency, encouraged by the Local Government Boards, for the School Medical Officer and the Medical Officer of Health to be the same person, as this does away with much red tape, but in the thinly populated districts it is not possible for one man to fill both places.

One of the memoranda of the Board gives the data required in each examination, a summary of which will show the complete character of the investigation. After the name, date of birth, school attended, and address are obtained, information is sought as to the personal history with regard to past infections and contagious diseases, and any information in the family history with regard to tuberculosis, etc., besides the living conditions, indicated by the number of rooms in the house, the number and quality of the family, and the work done outside of school hours, with the amount of payment if any. These data are obtained by the teacher and the local Medical Officer of Health and entered on the cards before the arrival of the examining officer. The teacher is also prepared to give information as to the relation of age to grade in the school, with opinions on the mental capacity, the presence or absence of defects of speech or hearing, and the average cleanliness and suitability of the clothing, as well as the usual degree of cleanliness of the head and person. The examiner checks such of these as he considers necessary, and makes further notes on vision, diseases of the external eye and ear, on the heart and circulation, the lungs and nervous system, the teeth, tonsils, adenoids and cervical glands and the nose. Any other noticeable peculiarities are recorded, with the height, weight, and the general nutrition. In addition to the regular examinations at any time there are always a certain number of specials usually on account of evident visual defect or of uncleanliness. All these data are collected, tabulated, summarized and averaged, and sent from each subordinate district to the chief local School Officer, who further tabulates them for the county or main district and sends them on to the Board of Education, where the whole series of averages for the country is made up.

The districts vary in size and in density, some of the county districts including as many as 150 schools and 30,000 children, all under the supervision of one man, who spends all his time at it. This may be said to be unusually large, and requires an exceptional man to carry it successfully. In fact the personal equation comes in to a marked extent as might be expected. It is possible for a man to cover quite a large district apparently thoroughly, in a moderate amount of time, by doing the minimum required, and in some of the districts this is the case. On the other hand there are a number of men, as has been noted by personal observations, whose heart is in the work and who take it up from all possible points of view. In schools in the poorer districts it is very difficult to induce the parents to pay attention to the improvement of the condition of the children and it is only by the use of tact, patience, and authority, often with the aid of the strong arm of the law, that gross defects in vision, carious teeth, adenoids and tonsils which make nose-breathing impossible, and verminous and filthy conditions of hair and clothes can be shown to the parents in the light of dangers to be removed at once. Through the truant officer and the information from the teacher conditions are often found that have escaped the notice of the health authorities, and an efficient medical examiner can perhaps have more influence on the improvement of a district than any other official. He is armed with many powers, can exclude children from school practically without appeal, can inspect the home to see if it is possible that a child can be healthy and clean under such surroundings, and can set machinery in motion that will bring the recalcitrant parent into the workhouse. It is easy to see wherein the difference between the efficient and inefficient officer will lie.

Although it is within the province of the Board of Education, as indicated above, to give free medical treatment to the children, it is not the policy at present to do so, with the exception of cleaning the heads in cases of vermin. When the child is found to be a deaf-mute or blind or epileptic or mentally defective it must be sent to a proper institution until 16 years old, such institution being under control of the Board. Imbeciles are under the care of the Poor Law Board, and not allowed at schools. The question as to how far treatment for the most notable defects, such as those of vision, such as adenoids, carious teeth, etc., in children whose parents cannot or will not take action can be undertaken by the board without evil results requires too much space to be considered here, but in general it may be said that the demand for free treatment and free food increases rather more rapidly than the poverty of the parents would indicate, and there is active discussion as to the dangers of pauperization along these lines.

R. G. P.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Antimeningitis Serum: In the *International Clinics* (Vol. IV, Series 19), Simon Flexner considers the results of the employment of antimeningitis serum. The serum possesses direct and indirect bactericidal power and may be regarded as producing its beneficial therapeutic effects through: (a) its power to act directly upon and to inhibit the growth of, or to destroy outright, the meningococcus; (b) its property of increasing phagocytosis and promoting intracellular digestion of the diplococcus; and (c) its power of neutralizing the soluble toxic products set free by disintegration of the meningococcus. The successful employment of the antiserum in human beings is dependent upon its injection into the subdural space. Along with the destructive influences of the antiserum on the diplococci go certain favorable changes in the inflammatory exudate, through which it loses turbidity, irrespective of whether it is only cloudy or whether it is already purulent. The rapidity with which the purulent exudate may clear up under the influence of the serum injections is very striking. The employment of the antiserum is indicated in all forms of meningococcic infection, but its use is indicated chiefly in epidemic cerebrospinal meningitis. Other localized meningococcic infections may also be subject to treatment by the antiserum, especially the metastatic joint infections not infrequently attending epidemic meningitis. After aspiration of the inflammatory exudate, the direct injection of the antiserum into the inflamed joint has been followed, as reported by Ladd, by rapid improvement in the condition. Since the efficacy of the serum depends largely upon the degree of its concentration at the seat of the disease, it should be employed only by subdural injection. The antiserum is readily injected into the subdural space; the risk of producing a dangerous increase of intradural pressure from the injection is so small as to be negligible, especially as in practise cerebrospinal fluid is withdrawn before the serum injections are made. The evidence at hand indicates that the earlier in the course of the disease the injections of the antiserum are made, the better the results. A safe rule is to inject the antiserum at once if a suspicion of meningococcic meningitis exists, without waiting to complete the bacteriologic diagnosis by film preparation or culture. The occurrence of a turbid or purulent fluid at lumbar puncture is always suspicious, and should call for immediate injection of the antiserum. The minimal dose for a single injection may be regarded as 15 to 45 c.c., except in young infants in which smaller doses may be used with equal effects. As a rule the serum passes readily into the spinal membranes when injected with a syringe, or by means of gravity through a funnel and rubber tube attached to the puncture needle. It is desirable to remove as much cerebrospinal fluid as possible before introducing the serum, in order first, to make space for the serum and to avoid unnecessary dilution of it, and next, to facilitate its passage quickly into the ventricles and subarachnoid space of the brain. The spread of the antiserum into the brain is also favored by raising the foot of the bed after the injection is completed. In view of the various considerations presented, the conclusion may be drawn that the antimeningitis serum, when used by the subdural method of injection in suitable doses and at proper intervals, is capable of reducing the period of illness; of preventing in large measure, the chronic lesions and types of the infection; of bringing about complete restoration of health in all but a very small number of the recovered, thus lessening the serious deforming and permanent consequences of meningitis; and of greatly diminishing the fatalities due to the disease.

Vascular Treatment: In the *Therapeutic Gazette* for December, H. A. Hare states that changes in the blood-vessels can be roughly divided for clinical purposes into three great classes, namely: far advanced atheromatous changes with calcareous deposits and associated destructive disease of the intima; fibroid change in which the most important lesion is an arterio-capillary fibrosis; and last of all, vascular spasm, whereby the elasticity of the vascular walls is impaired almost as much as when an actual organic lesion is present. It is exceedingly rare in his experience to meet with marked calcareous change, or brittleness in the arterial system of the well-to-do or upper classes, and comparatively rare to find high tension due to spasm and fibrosis in the working classes; to put the matter in another way, hard manual labor does not cause the same arterial changes that are caused by hard mental labor and nervous stress. This is all the more interesting because the abuse of alcohol, and syphilitic infection, the two great causes of arterial disease, may be considered to exert an equal or nearly equal influence in both classes. The deduction from these facts, from a practical clinical standpoint, so far as treatment is concerned, is that when calcareous change is well developed little can be done for the immediate or ultimate relief of the patient, whereas in the other type a good deal can be done, the degree of good depending, of course, upon the severity of the lesions in each instance. Given a comparatively young man with bad vessels, and an old man with good vessels, each attacked by an acute infection like pneumonia, the prognosis ceases to depend upon actual age; it is bad in the former, and favorable, other things being equal, in the latter. Nor is it safe to be content with the examination of one vessel in determining the general arterial state. How many cases of so-called cardiac disease depend in reality upon cardiac fatigue due to vascular disease? Finally how futile it is to stimulate a heart which is pumping against a high pressure in narrowed and tortuous vessels unless we simultaneously relieve it of some of its labor by reducing that pressure by the nitrates! To give digitalis under these circumstances, in the face of high tension, is equivalent to giving a tired horse an extra meal and then doubling the load.

Calcium Lactate: *Merck's Archives* for December *(The Hospital)*, state that urticaria, chilblains, lymphatic headache and the like are associated with a condition of defective blood coagulability, and it is generally recognized that any lesion that can be included under the general term of serous hemorrhage, can often be greatly benefited by the oral administration of the calcium salts. The preparations best adapted for this purpose are the chlorid and the lactate; of these the latter has the advantage in that its organic radicle is readily oxidized in the system, with the result that the base remains more fully at the disposal of the organism than is the case with the chlorid. It is important, however, that the lactate should be freshly prepared, since it decomposes when kept any length of time. For adults the dose is 15 grains, flavored with one-half to one minim of tincture of capsicum, and made up to the ounce with chloroform water. The treatment should be continued for six weeks at a time, three doses being given daily about an hour before food. More than half the cases of chilblains so treated are rapidly cured, though a repetition of the course may be required the next winter. Other affections in which similar treatment has proved beneficial are boils, headache of the lymphatic type, urticaria, face-flushing, acne rosacea and perspiring hands and feet with offensive odor. If constipation should result from the use of the calcium it may be corrected by a small dose, a preparation of senna or other cathartic at bedtime. W. K. Simpson, too, has used quite extensively the calcium lactate to prevent hemorrhage, and to control it in operations on the upper respiratory tract, especially in removal of tonsils and adenoids: his experience shows that calcium lactate has a controlling influence in hastening coagulation of the blood, and that it is more effective in cases of hemophilia where coagulation is delayed than in normal cases. In operations on hemophiliac cases the salt should be given for a period before the operation; the same is advisable in all operations on the tonsils as a preventive measure. The drug should be continued after the operation to diminish primary and prevent secondary hemorrhage. Of all the calcium salts the lactate is the most effective and most agreeable to administer, and it does not irritate the stomach.

Rheumatic Heart Disease: In the *New York Medical Journal* for Jan. 1, *(The Practitioner),* Carr believes that the first and most essential point upon which to insist in the treatment of rheumatic heart disease in children is the paramount importance of prolonged and complete rest. The child must not be merely kept in bed, but must remain absolutely recumbent for a period depending upon the severity of the attack, but for not less than several weeks. During this time the child should be kept on a very light diet, for his bodily needs are reduced to a minimum, and it is most desirable to avoid anything calculated to raise the arterial tension and so throw additional strain upon the left ventricle. Constipation is often very troublesome and most undesirable, so that laxatives must be given freely as required. Of the antirheumatic drugs he states that the influence of the salicyl group upon the cardiac rheumatism is most disappointing as compared with their remarkably satisfactory action upon the joint inflammation when given in adequate doses. The synovitis usually clears up entirely in from 24 to 48 hours, but the effect upon the damaged heart, so far as can be inferred from signs and symptoms, is only too often inappreciable. Nevertheless, while realizing that no great reliance is to be placed upon drugs in cases of cardiac rheumatism, he considers that it is desirable to give them until something better has been discovered, as they probably tend to diminish, to some extent at least, the severity of the carditis. When danger threatens from heart failure, strychnin and caffein are probably the safest drugs to use, with a little brandy in case of emergency. One is naturally inclined to turn to digitalis, but it is not of any value in cases of this kind, for when its use appears to be called for the heart muscle is probably inflamed, and cardiac weakness due to definite myocarditis is not apt to react satisfactorily to digitalis. For local treatment when there is pericarditis an ice-bag should be applied continuously over the precordium so long as any friction is audible. Pain is not often a prominent symptom in the rheumatic pericarditis of children and in many cases is entirely absent: when present the ice-bag is usually sufficient to relieve it.

Ichthyol: *Merck's Archives* for December asserts that, according to Herman Klotz, one of the most easily applied and valuable drugs is ichthyol. If applied upon the skin as 25 to 50% watery solution it will rapidly dry to an elastic pellicle, which will not crack over the joints and which can be easily washed off with soap and water when desired. There is absolutely no soiling of the clothes; no dressing is necessary where drying is retarded owing to much secretion, as a layer of cotton or some indifferent dusting powder may be used. Ichthyol applied in this way is useful in a large number of morbid conditions of the skin, particularly when there is an inflammatory reaction. Its use in erysipelas is too well known to require comment. Dermatitis due to drugs, particularly that resulting from contact with poison ivy, is certainly much more easily and efficiently treated by the ichthyol varnish than by the disagreeable and unhandy wet dressings still described in most textbooks. Ichthyol is also indicated in burns of the first and second degree and in chilblains, but burns of the third degree belong rather to the surgeon. Among the exanthemata, scarlet fever and small-pox have been treated with ichthyol with the best results, and the non-toxic character of the drug allows it to be applied over large areas. Many indications will be found for the use of ichthyol varnish in skin diseases proper, where the process is chiefly an inflammatory one. In urticaria the itching is controlled, though the actual cause of the condition will also require treatment. In eczema, on the other hand, ichthyol will actually cure, provided the strength of the varnish be properly adjusted. The most suitable are the erythematous types, though the vesicular and papular subacute forms will also be benefited. When there is much secretion it is best to first use an astringent such as Burrows solution. In chronic eczema ichthyol is of less service.

Human Milk: In the December number of the *Monthly Cyclopaedia and Medical Bulletin,* J. Madison Taylor treats of the curative powers in human milk. That physician or that mother who, except for cogent reasons, omits to enforce or employ breast-feeding thereby deprives the infant of the most powerful agency for the conservation of life and health. The punishment falls not upon the offender but upon the helpless victim. He points out a few reasons for the extreme desirability of conserving in all ways that best of foods, and one may say of immunizing agencies, breast milk. That milk is capable of conveying antitoxic substances after these have been injected into the mother has been known for a number of years. His conclusions are: (1) The prevailing custom of considering only the nutritional value of milk and other forms of food used in the artificial feeding of infants is partly responsible for the great mortality that prevails among them, especially during the first year. (2) The protection of the infant against infection depends in no small degree upon bactericidal and antitoxic substances physiologically supplied to it in the maternal milk. The protective properties of any artificial food as well as its nutritional value should receive attention. (3) All phases of the problem indicate that of the various modes of feeding, direct maternal nursing affords the greatest protection to the infant. It follows then that (4) we should do all in our power to promote the abandonment of artificial feeding, and thus reduce greatly the mortality among infants.

Hot Baths: *American Medicine* for December says that hot baths in typhoid fever have now been tried long enough to warrant the formation of opinions worth something. The Brand treatment of the extraction of fever heat by cold water was so rational, and saved so many lives, that we all inclined to the view that it was the only thing to do. Every one then tried to devise means of preventing the suffering of the bath and the more or less dangerous shock. For this purpose all kinds of schemes have been tried, down to the cold air bath, which is merely the playing of an electric fan on the patient day and night and which in some hands has produced excellent antipyretic effects, even when not accompanied by any other kind of bathing or of moistening the skin. What we need, however, is something which will draw blood to the surface, dilate the superficial capillaries, and stimulate the sweat-glands to greater activity, and these are preeminently the effects of hot baths. No wonder it is found that after the bath the body temperature goes down faster and further than in the Brand treatment, and what is infinitely better, it stays down longer, there is little or no suffering and no shock. The mortality should be reduced too, but there are not sufficient statistics to say how much. It is high time that we observe whether cold baths in typhoid, after a temporary reduction of temperature, do not really cause a higher later rise and compel us to give more and more cold applications. That is, the Brand treatment increases its own necessity while hot baths lessen it, so it is wise to listen to those who are now so enthusiastic over the results of this remarkable reversal of therapy.

Morphin: Robert Tissot in the *American Journal of Clinical Medicine* for January asserts as to the use of morphin in typhoid fever, that its harmfulness in this disease is an intangible medical dogma. It was on this point that Rossbach determined, although with trepidation, to give morphin to an agitated patient whom delirium and jactitation had brought to the end of his strength, and who had not slept for several days. The result was strikingly happy. The heart was not weakened but, on the contrary, the reparative sleep gave to it new strength as well as to the entire organism. Delirium and the agitation had cost the patient an enormous amount of wasted energy. To arrest such sources of loss is plainly excellent therapy. The nervous system exercises a very great influence on the production of heat and on its regulation. It is also marvelous to see the tonic action of morphin upon patients in the midst of a chill, or in an attack of dyspnea and febrile pain. To these morphin gives new strength, and he believes that it is indicated in febrile conditions with irritability of the muscular and nervous system.

Olive Oil: The *Medical Record* for Jan. 1 comments on the rolê of fats in diseases of the stomach, noting the fact that Cohnheim was one of the first to advocate the employment of pure olive oil. On the appearance of his paper, Moore and Ferguson tried it in a few cases with such obviously beneficial effects, not only in diminishing the acidity of the stomach contents but also in relieving the subjective discomfort and promoting the general nutrition of the patient, that further investigation of the influence of fats appeared desirable and they carried out a series of experiments. The oil treatment was carried out in cases of gastric ulcer, duodenal ulcer, carcinoma of the stomach, nervous dyspepsia, dilatation of the stomach (atonic), alcoholism and constipation. They conclude from a clinical standpoint that their experience with the administration of fats in conditions in which hyperacidity of the stomach contents exists, has shown a very definite amelioration of the subjective manifestations of the condition. In the simple forms of hyperacidity, the addition of cream and butter in abundance to the diet, with a diminution of the starches, will often suffice to remove the subjective manifestation. Almond oil is used only in the more severe types of hypersecretion, and then in doses of one ounce the first thing in the morning, and repeated before subsequent meals if necessary. The oil treatment, as a means of neutralizing extreme acidity of the stomach contents, is founded on sound premises if, as believed, such excessive acidity is due to pathologic condition of the gastric glands. At any rate it is certain that fats have a depressant action on the acidity of normal gastric secretion, and it seems to be certain that this depressant action has a favorable action on extreme acidity of the stomach contents, and so fats should be administered in cases in which this condition exists.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph.G., Ph.D.

Solution of Aluminum Acetate: A recipe for this vexatious preparation, said to stand sterilization, is given by Soonss *(Pharm. Zeitung,* through *American Druggist, 55,* 371) 30 parts pure aluminum sulphate is dissolved in 75 parts distilled water and is then added to 13 parts calcium carbonate (precipitated chalk?) mixed with 20 parts water. The mixture is let stand 24 hours with frequent stirring and then heated to drive off carbon dioxid. Finally 30 parts of 30% acetic acid is added, and after letting the precipitate subside, the clear solution of aluminum acetate is decanted.

Tincture of Citrochlorid of Iron, N. F.: E. A. Ruddiman *(Pharmaceutical Era, 42,* 622) describes the advantages of this preparation; made by mixing solutions of ferric chlorid with a solution of sodium citrate, adding alcohol and filtering out the precipitated sodium chlorid. In many prescriptions it is much superior to tincture of ferric chlorid for, unlike the latter, it makes a clear solution with sodium salicylate, soluble carbonates, soluble phosphates, benzoates, arsenates and arsenites, (like Fowler's solution). Among other substances cited as completely miscible with the preparation are iodids, mucilage of acacia, and antipyrin. It is not, however, a good vehicle for quinin sulphate.

New Basic Elixirs: In a paper read before the Pennsylvania Pharmaceutical Association G. M. Beringer describes three new elixirs, proposed for admission in the forthcoming edition of the National Formulary. All three contain about 20% of alcohol and it is anticipated that at least one of them will be colored red. The three proposed are, Compound Elixir of Almond (flavors, oil of bitter almond, vanillin, and orange flower water), Compound Elixir of Cardamon (flavors, oils of cardamon, orange, cassia, cloves anise, and caraway) and lastly Compound Elixir of Vanillin (vanillin and oils of orange, cardamon and cassia). (*Pharmaceutical Era, 43,* 622.)

Snake Bite Cures: Two more so-called antidotes for snake bite are reported, this time from Siam: One consists of the leaves and twigs of *Barleria prionitis* and the other is the plant, *Justicia genderussa.* So reports Dr. Arnold Lawson *(Chemist and Druggist, 75,* 480.)

Dangerous Hair Washes: Of late, hair washes containing carbon tetra-chlorid have been employed. These are markedly toxic, several deaths resulting from their use. *(Lancet,* through *Chemical Abstracts, 3,* 2587).

Composition of "Clavin": This constituent of ergot is shown by D. D. Van Slyke *(Proc. Soc. Exp. Biol. Med.,* through *Chemical Abstracts, 3,* 2587) to consist of the protein derivatives, leucin, isoleucin and valin.

Evaporation of Camphor: La Wall *(Merck's Report, 19,* 1) has studied the volatility of camphor. He finds a lump loses somewhat over 60% of its weight on being kept 45 days on the shelf of a dust free closet, while powdered camphor under similar conditions, is entirely volatilized in 20 days. Liniment of camphor exposed in an uncorked bottle at 40° C. for a month, lost practically no camphor, the 20% preparation being reduced to only 19.21%. Spirit of camphor under the same conditions increases in strength, losing the alcohol by evaporation more rapidly than it does the camphor.

Syrup of Hoarhound: As there is some demand for this syrup in prescriptions for cough mixtures and as the usual method of manufacture is by mixing the fluidextract with syrup, G. M. Beringer *(Merck's Report, 19,* 13) has devised a more sightly preparation from the drug (20%) by percolation with a glycerinic aqueous menstruum and dissolving sugar in the concentrated percolate.

Stability of Galenicals: Much has been said concerning the deterioration of galenicals on standing, but the experiments of A. R. L. Dohme and of J. M. Francis, show that all the official assayed fluidextracts, extracts and tinctures—except extract of physostigma, fluidextracts of coca, and of aconite and tincture of aconite—after standing a year in partly emptied but corked bottles—were practically the same strength as when freshly made (Editorial, *American Druggist, 56, 3).*

Odorless Ichthyol: Ichthyol can be made odorless by shaking 200 grams with 150 grams water and 100 grams 3% hydrogen dioxid solution, during 24 hours, the mixture evaporated to dryness mixed with water to make 200 grams and neutralized with ammonia. So says Helmers (*Apotheker Zeitung,* through *American Druggist, 56,* 7). Whether the product is still ichthyol or acts like ichthyol is another question, says the editor of the German journal.

Instability of Citarin: According to Lorenson (*Apotheker Zeitung,* through *Druggist Circular, 54,* 14) citarin is not a harmless drug, as it decomposes on standing, with evolution of formaldehyd. He met a case where the administration was followed by violent vomiting.

A New Saponin Glucoside: The seeds of *Bassia longifolia* contain a glucoside named by the investigators *mowrin,* which analysis shows consists of 51.9% carbon, 6.85% hydrogen, 41.25% oxygen. It hydrolyzes to a hexose sugar and a substance called mowric acid, having properties, though in lesser degree, like the glucoside itself. Both exert a powerful laking effect on blood corpuscles in saline suspension. (Moore, Baker-Young and Sowton, *Merck's Report, 19,* 15).

Cacao and Chocolate in Pharmacy: W. R. White read a paper on this subject at the last meeting of the American Pharmaceutical Association *(Merck's Report, 19,* 16). He finds that powdered cacao (or cocoa, as it is commercially called) with sugar is an excellent masker of the taste of such chemicals as sodium salicylate, acetanilid, aspirin, santonin, ipecac and opium, sodium bromid. He suggests recipes for cacao emulsions—one of cod-liver oil, another, of castor oil.

Academy of Medicine of Cleveland.

CLINICAL AND PATHOLOGICAL SECTION.

The sixty-fifth regular meeting was held at the Cleveland Medical Library Friday, January 7, 1910, J. S. Tierney in the chair.

The program was as follows:

1. An Analysis of the Causes of Infantile Mortality in Cleveland for 1908, A. F. Furrer. (To appear in full in the Journal.)

R. A. Bolt, in the discussion, said that the high mortality from gastrointestinal affections indicated the prime importance of careful infant feeding. Breast feeding should be insisted upon whenever possible; most of the excuses made by the mothers for discontinuing it were insufficient and the relative dangers of artificial feeding should be pointed out to them. The milk situation in this city should be clearly understood by the profession: the general milk supply was dangerous and the milk from but one or two dairies was above suspicion.

2. Mercurial Treatment of Pulmonary Tuberculosis, Joseph Placak. (To appear in full in the Journal.)

S. L. Bernstein said that the experience of Solly, of Colorado Springs, had been that mercury in tuberculosis was without beneficial results. Personally he had not used it but he had seen a satisfactory result in one case in which syphilis also existed. The administration of potassium iodid for a few days was useful in some cases in making evident obscure rales, thus facilitating the diagnosis.

C. H. Clark said that the first case treated by Wright happened to be a syphilitic and that under the administration of bichlorid of mercury the tuberculous lesions seemed to improve as well as the syphilitic ones. It was true, as had been pointed out in the paper, that all accessory conditions at Wright's station were most favorable for the cure of tuberculosis. He had seen one case in which injections were so painful that they had to be discontinued and he had seen no satisfactory results from mercury in uncomplicated tuberculosis. He had seen paralysis of the arm of three weeks duration resulting from one injection of mercury.

J. Placak, in conclusion, said that as a result of a conversation with Wright he had at first been very enthusiastic. His expeience with the pain of the injection had been similar to that of C. H. Clark and had had much to do with his abandoning the treatment. In the case of syphilitics large doses of succinimid were tolerated.

3. The Treatment of Varicose Ulcers, M. Coplan. (To appear in full in the Journal).

G. E. Follansbee said that there seemed to be an hereditary tendency to the occurence of varicose veins: He had noticed this predisposition in several different families. Insufficiency of the venous valves was largely responsible for the severity of the symptoms. The character of the application to varicose ulcers was not so important as was rest with the leg elevated. He had seen better results follow the use of normal saline solution than the application of antiseptics.

E. W. Hill emphasized the necessity of rest and stated that years ago he used to apply powdered charcoal until the surface of the ulcer was clean and then used compresses soaked in cod-liver oil.

J. Placak said that 25% of the patients in the City Infirmary had varicose ulcers and with them they had had very good results from skin grafting if the patients could be kept quiet in bed.

M. Coplan, in conclusion, said that he had not noted any hereditary tendency in his cases. Skin grafting was a surgical procedure and hence had not been considered in his paper which discussed only non-surgical measures. Under the treatment advised he had been able to cure practically all of his cases.

4. Scientific Research in State Hospitals, Chas. H. Clark. (To appear in full in the Journal).

H. H. Drysdale said that it was very unfortunate that with such wealth of material at hand it was at present impossible to carry out the investigations along these lines to the extent that was desirable. The attitude of the public toward insanity should be changed and the stigma attached to mental disease and to the treatment in State hospitals should be removed: mental diseases should be considered in the same light as other bodily conditions. The study of psychic diseases was all important and the Academy should lend its influence to obtaining better facilities from the State for this purpose.

B. E. Sager said that the average physician knew very little about insanity and the proper methods of caring for the insane. If the profession could be more in touch with the work going on in the State hospitals it would be of great advantage to them and to their patients.

C. H. Clark, in conclusion, said that it was the aim of those in charge of the State hospitals to be in closer touch with the general practitioners and if any physicians should care to investigate the work in these institutions they would be heartily welcomed. They had a large amount of material, including many very interesting cases, some 490 patients had been admitted during the past year. The unfamiliarity of the average physician with the diagnosis and treatment of insanity, and especially with the prognosis, was largely due to the fact, he believed, that the course of training in this subject in most medical colleges was very inadequate and that the student had very little opportunity to see many insane cases.

COUNCIL MEETING.

A meeting of the Council of the Academy of Medicine of Cleveland was held Tuesday, January 5.

The following were elected to active membership in the Academy: N. F. Schwartz, Clement I. Harpster, W. A. Landgrebe, Gordon N. Morrill, C. Schmitz, Elvin L. Lowthian. To associate membership: A. A. Sparre, medical gymnast; R. R. Powell, D. V. M.; Jas. B. Considine, D. V. M.

The following names of applicants were ordered published: For active membership: C. Orville Wetter, S. Baumoel, Richard Dexter and Andrew R. Warner. For non-resident membership: Harlan Dudley, Macedonia, Ohio. For associate membership: E. R. Freeman, A. G. Newcomb, Glen A. Boone, attorneys.

The following were elected chairmen of committees: C. L. Cummer, Chairman of the Membership Committee; W. B. Chamberlin, Chairman of the Program Committee; R. E. Skeel, Chairman of the Legislative Committee; W. T. Howard, Chairman of the Public Health Committee. C. E. Ford was elected a member of the State Committee on Public Policy and Legislation.

A Committee consisting of M. J. Lichty, Chairman; J. E. Tuckerman and O. A. Weber was appointed to suggest amendments to the constitution.

The Committee to present names to Mayor-Elect Baehr reported progress: the report was accepted and the Committee was retained. The Council then went into executive session for the purpose of appointing a committee to report names for district physicians to the Council.

A meeting of the Council was held Monday, Jan. 17, 1910.

The resignation of Jessie N. Trumper was accepted.

A communication from W. T. Howard declining the Chairmanship of the Public Health Committee was read. O. T. Schultz was elected to take his place.

The report of the committee to recommend names for the positions of district physician was read. After some discussion it was decided that the report be accepted and the list turned over to Mayor-elect Baehr.

M. J. Lichty and S. L. Bernstein were appointed a committee to present to the Academy of Medicine the necessity of the proposed amendment concerning the annual dues.

ACADEMY MEETING.

The seventy-second regular meeting of the Academy was held at the Cleveland Medical Library, Friday, January 21, 1910, C. B. Parker in the chair.

The proposed amendment to Chapter IV, Section II of the by-laws, raising the annual dues from $4.00 to $5.00, was voted upon and carried. T. A. Burke, F. E. Bunts, and T. Sollman spoke in favor of the amendment.

The program was as follows:

1. The Diagnostic Value and Therapeutic Effects of Bismuth Paste on Chronic Suppurations, Emil G. Beck, Chicago.

The manner in which this method of treatment had been first used for purely diagnostic purposes, especially to indicate the course and the extent of sinuses and fistulous tracts, was pointed out by the speaker. The curative effects of the injections was quite unexpected at first, but after being noted in a number of instances it had been used with this end in view more and more frequently and with very gratifying results. The limitations of the treatment were pointed out, especially the fact that its use is contra-indicated in the acute stages of certain infections and also the fact that it would seldom produce a cure in cases of retained sequestrum of the bone until the sequestrum had been removed. The possibilities of failure were indicated and stress was laid upon the fact that certain samples of bismuth subnitrate seemed to be inert and did not readily decompose as desired. The occurrence of poisonous symptoms in certain cases was noted and the measures usually adopted in such were defined. The paper was abundantly illustrated with case reports, stereoscopic photographs and radiographs and a large number of stereopticon views. (The paper will appear in full in the International Clinics).

2. Medicine and Surgery in Classic Art, Roswell Park, Buffalo.

This consisted of an exhibition with the stereopticon of a large number of pictures by famous artists illustrating medical subjects. Attention was drawn to many interesting points in these pictures and the following introduction was given by the speaker:

"The relations between pictorial art and the varied and many subjects afforded by disease, deformity and death, in their diverse forms, have grown closer with each succeeding century. The Egyptians portrayed within their tombs the different methods of caring for the sick, and especially the process of embalming. The ancient Greek sculptors made frequent choice of Aesculapius, the Father of Medicine, in their beautiful statuary, and the museums of Europe afford many of their conceptions of this demi-god, preserved in statues of imperishable marble.

"With the frescoes and other mural decorations, and the use of canvas by the earlier artists of the medieval period, representations were frequently made of those miracles so briefly described in the New Testament, and of those attributed to the various saints. In this way the earliest use of the brush for this particular purpose was almost entirely confined to purely Biblical myths, or to those endorsed by the Church. As time went on and as art developed quite imaginary events were illustrated in this way.

"Ancient statuettes gave more or less faithful replicas of actual disease and deformity, many of them with scrupulous fidelity. Diderot wrote: 'Nature does nothing incorrectly; every living being, whether attractive or unsightly has its cause, and of them all there exists not one which is not as it should be.'

"While we may dispute his thesis we should not then blame the artist who makes a faithful copy of the original and gives it to posterity.

"To some the ideal appeals, to others the grotesque, the horrible, the unspeakable. The selection of subjects depends much on the taste and bent of the artist, but upon him also depends their faithful depiction. In the picture must be read the story. Perhaps no more illustrative example of an extreme taste in the direction of the horrible may be found than in the case of Wurtz, while perhaps his strongest effort in this direction is his 'Starvation, Insanity and Crime,' to be seen in the Wurtz gallery in Brussels. In represents a starving mother, driven thereby to insanity, preparing to make food of her own child; a horribly realistic example of starvation. Yet in vigor, in fidelity to his subjects, in the realism of art, there perhaps has never lived a more wonderful artist than he. Even Verestschagin must yield the palm.

"It was a visit which Charcot once paid to the church of St. Ambrose, in Genoa, where he saw one of Rubens' great paintings representing the exorcism of an evil spirit, which roused his special interest and led to those studies whose later outcome was his great work 'Les Demoniaques dans l'Art,' and later to its companion volume 'Les Malades et les Difformes dans l'Art.' By a natural process of extension and evolution came later the periodical 'Nouvelle Iconographie de la Salpetriere,' which appeared regularly for at least a dozen years. In these great works he had the assistance, among others, of Paul Richer, whose great work 'L'art et la Medicine' should be in the hands of every one interested in the subject.

"As Richer has well said, the artist is the perpetual guardian of beauty. Incidentally if he chooses occasionally to produce on canvas or copper, by brush, etcher or graver, the purely mythical, the fantastic or the grotesque, he but keeps constantly before the eye the actual happenings of time past, and pleases while he instructs. He must be true to his selection, just as the part of the villain in the drama should deserve as careful study and attention as that of the hero.

"No more dramatic scenes are ever witnessed than those which occur in the life of the busy practitioner of medicine or surgery. The pathway from the cradle to the grave is strewn with them. It is not strange then that to these the artist desirous of a striking subject should turn his attention, for here he may find scope for portrayal of the most appealing hospital or domestic incidents, the most heartrending tortures or the most appalling events.

"Even architecture is more closely related to natural history than is generally appreciated, as is illustrated by Cook's work on 'Spirals in Nature and Art,' in which he shows what careful study of spiral sea shells Leonardo da Vinci made before constructing some of his spiral staircases and other similar work. And, by the way, there are not wanting those who claim that to Leonardo himself, rather than to Vesalius, must be attributed the illustrations which were so remarkable a feature in the great work on Anatomy that gave the latter his undying fame, and caused him to be called the 'Father of Anatomy.'

"Surely the Douglas Publishing Company have done well in thus introducing to the profession, at moderate cost, some of these masterpieces. A class of pictures dignified, one may almost say sanctified, by the brushes of Rubens, Rembrandt, Michael Angelo, da Vinci, the Teniers, Dou, or by the pencil of Hogarth, may well find imitation among the modern artists, who perhaps contribute to their work a more vivid realism and completeness, as well as a greater fidelity to nature, than did their predecessors.

"Those who desire to pursue this subject further may be referred to the works of Charcot and Richer, mentioned above, and to the following—all recent and available, and all valuable in their respective directions: Eugene Hollaender. 'Die Medizin in der klassichen Malerie,' and 'Die Karikature und Satire in der Medizin.' Emilio Curatulo. 'L'arte di Juno Lucina,' devoted to obstetric art. G. J. Witkowski. 'Curiosités Médicales, Littéraires et Artisque sur les Seins et l'allaitement' and 'Anecdotes Historiques et Religieuses sur les Seins et l'allaitement,' both dealing with the mammary gland and nursing, as portrayed in art."

VETERINARY SECTION.

The tenth regular meeting was held at the Cleveland Medical Library, January 6, 1910, R. C. Roucche in the chair.

The following program was presented: 1 Mule-Foot Hogs, W. T. Sparhawk. 2. Standardization of Veterinary Tetanus Antitoxin, R. C. Roucche. Discussions on the Tuberculin Test and Contagious Abortion were also held.

Book Reviews.

Principles of Hygiene. A Practical Manual for Students, Physicians, and Health Officers. By D. H. Bergey, A. M., M. D., Assistant Professor of Bacteriology, University of Pennsylvania. Third revised edition, octavo, illustrated. Cloth, $3.00 net. W. B. Saunders Company, Philadelphia and London, 1909.

This volume of 555 pages covers a wide field surprisingly well. Since so many topics are considered the treatment of all must be rather terse, but this is an advantage rather than a defect. The student cannot hope to learn all about hygiene from a single handy volume, so that the more succinctly such a volume states its subject matter the greater is the amount of ground that can be covered. In the revision the progress made in such important topics as water and sewage is not lost sight of, and the later developments in our knowledge of immunity and of the etiology of several diseases are noted.

The crispness and brevity of the author's style make the book easy reading, but upon two slight points the elegance of the English might be improved. Preventive sounds better than "preventative" (p. 29) and tuberculous should be preferred over "tubercular" (p. 211 and throughout the discussion relating to the danger of infection from meat) when the specific infection produced by *B. tuberculosis* is meant.

If hygiene could be popularized and its facts made understandable by the masses public health would be improved. But the reverse does not necessarily follow—popular beliefs cannot always be accepted at their full value. In speaking of condiments (p. 239) the author says: "The excessive use of vinegar tends to produce a watery condition of the blood, and is therefore injurious." According to the laity vinegar makes the blood "thin," so that the association of scrawny spinsterhood and pickles would seem to be a *propter hoc* rather than a merely *post hoc* one. In spite of the lay belief and of Bergey's statement one must be inclined to doubt that vinegar can produce a permanent hydremic or "watery" condition of the blood.

Even if one is opposed to placing the syphilis organism among the protozoa a non-committal standpoint would be the more judicious one, in view of our present knowledge, and *Treponema pallidum* ought not be placed definitely and without hesitation among the organisms belonging to the vegetable kingdom (p. 355).

In the section dealing with the protozoa (p. 411 ff) there are a number of slight inaccuracies, due to careless reading either of original papers or of proof: For *Amoeba coli* (p. 411) the more proper *Entamoeba histolytica* should be substituted. If, as occurs on page 412, *Plasmodium malariae* and *Plasmodium vivax* are used *Plasmodium praecox* would seem to be better than its synonym *Laverania malariae.* On page 413 *monbata* should be *moubata, Glossia* should be *Glossina,* and *rongeti* should be *rougeti. Babesia* is preferable, as the genus name, to *Pyrosoma* (p. 417) or *Piroplasma* (p. 415) ; and if the latter term is used the species designation should be *bigeminum,* not *bigeminus.* There does not seem to be any very valid reason, except perhaps oversight during revision, for splitting the discussion on spotted fever; part is found under its own sub-title, "Spotted Fever of the Rocky Mountains" (p. 415), and part after dengue (p. 417) under the sub-title, "Other Diseases in which the Occurrence of Animal Parasites has been Reported." On page 423 the more proper *Trichenella* is used, on page 209 *Trichina.* Perhaps these are minor points and should not be too severely criticised, but they are evidence either of carelessness or of improper compilation of facts from the literature.

A more detailed index would improve the value of the book.

O. T. S.

Biographic Clinics, Volume VI. Essays Concerning the Influence of Visual Function, Pathologic and Physiologic, upon the Health of Patients. By George M. Gould, M. D. Formerly Editor of American Medicine, Author of Various Medical Dictionaries, "Borderland Studies," "The Meaning and the Method of Life," "Righthandedness," etc. P. Blakiston's Son & Company, 1012 Walnut Street, Philadelphia. 1909. Price $1.00 net.

This is the sixth and, according to the author's announcement, the last in his series of Biographic Clinics written to show the influence of the visual function upon health. The mention of the headings of a few of the chapters will show the scope of the work.

He discusses the case of Jonathan Swift in a manner similar to his study of numerous other literary persons, whose illness and suffering were in his opinion due to eye-strain, and adds a chapter from his own records not unlike what any oculist might give who is doing careful conscientious refraction work.

A remarkable case of epilepsy caused by eye-strain is the subject of a chapter and another is upon a strange and illogical case of suicide in which there is no doubt in his mind that the man committed suicide because of eye-strain. There is a chapter upon the common origin and nature of "blind spells" petit mal, faintings, swoonings, coma, pseudo-epilepsy, epilepsy, migraine, etc. "Directly or indirectly, at first hand or by intermediation of a secondarily produced cause, the vast majority of these diseases are due to eye-strain, either to ocular function or ocular malfunction." He is confident that 98 or 99% of his cases of migraine have been cured and adds, "those who do not cure the vast majority of such cases do not know how to diagnose and prescribe for ametropia."

In a chapter upon vision and senility we have a typical example of this kind of strong statements which have called forth such severe criticism upon the author. He says, "The right correction of ametropia is in truth the most important and revolutionizing need of medicine and the unrivalled condition of social progress. It will do away with more hospitals, extinguish more suffering, lengthen the term of human life more than any or all solutions of the mysteries so avidly sought in all the laboratories. Scornful of functional pathology, worshiping the grinning ghost of anatomic and experimental pathology, the laboratory expert seeks the postmortem table, and makes the dead tissue-slide, while neglected functions and the faraway sources of disease endure and pray for a coming scientist with living emotions, with sympathetic desire to prevent the cadavers from coming to his 'dead-house.' Old-age, however unavoidable before our own generation, is now absolutely unnecessary."

In a chapter upon Meniere's disease he takes the position that it is simply migraine or sick headache with many symptoms ignored and with three of the secondary or incidental effects of migraine over emphasized—the vertigo, tinnitis, sometimes of a purely functional neurotic nature, a reflex ocular neurosis to the center or to the organ of hearing, sometimes of traumatic origin caused by vomiting, and partial or complete deafness, due to injuries in vomiting.

In a chapter upon ophthalmovascular choke he states that, "the manifest existence of eye symptoms after perfect correction of ametropia, with 'fading image,' plus the equally manifest ophthalmoscopic demonstration of 'vascular choke,' brought to view a new disease which he feels is of great frequency and significance." He cites in detail a number of cases of this to him "new and clearly defined type of ophthalmic disease" and describes in detail the subjective and objective symptoms. The prognosis he says is not the brightest. It is a comfort at last to hear even Dr Gould acknowledge that there is such a group of cases which even he cannot help by "scientific glasses," an experience which I believe the rest of us have been a little more ready to acknowledge. The question that occurs to the reviewer is whether Dr Gould has really discovered a new disease or merely invented a new name for an old condition, for we have all had numerous patients presenting similar subjective symptoms and have not infrequently noticed that some of these cases of marked asthenopia which we have been able to relieve only in part or scarcely at all present ophthalmoscopic evidences of more or less vascular congestion similar to some of his descriptions. I must confess that he puts more stress upon venous pulsation than I have been accustomed to associate with it when he says it is "evidence of a function which either is or may be in itself pathologic. It is plainly a demonstration of 'choke' showing that the outflow of venous blood from the eyeball is irregular and difficult." A careful tabulation of all our patients showing retinal venous pulse might possibly afford us some valuable information. I cannot agree with him in his belief "that in most or all of the cases, by the anatomic pathologists called retinal arteriosclerosis, ophthalmovascular choke is the real disease instead of primary sclerotic changes in the vessel walls."

The refraction changes dependent upon glycosuria are illustrated by the history of a case and the literature of the subject is discussed at some length. This change consists in an increase of myopia or a decrease of hyperopia by glycosuria or the opposite change by a return toward or to normality.

He advises that the general practitioner should study refraction which is all right if the general practitioner will study it thoroughly and will then do sufficient of it in addition to his general practise to keep himself proficient and in the midst of his other work will give his refraction cases the requisite time necessary to obtain accurate results.

Most of the chapters in the volume have previously appeared elsewhere but that upon 57 varieties (not of Heinz products) of medical and ophthalmic blunders he published by himself because he thought the medical journals would probably not have accepted it. This chapter is replete with many bitter invectives against the ophthalmologists and other physicians not only as regards their ability but also their honor and integrity. Unfortunately this attitude toward the general profession and especially toward his own branch of the profession is too evident throughout the entire book.

While we must acknowledge that we see altogether too many evidences of careless refraction work, of lack of appreciation of the so-called little things and absence of realization of the relationship between the eyes and the general health, yet I cannot bring myself to believe, nor would I want to think, that either the general practitioner or the oculist is as bad as Dr Gould seems to think and tries to make us believe he is. I do not believe that the modern leaders in our profession are devoid of honor, that "they do not wish a disease," as for example migraine, "cured and prevented and do not want to know how it can be prevented and cured" or that they "in no time or place have ever welcomed new truth, have indeed scorned and opposed and derided both the truth and the truth bringer." It seems a pity that one who writes so well should be so vindictive and bitter. We acknowledge that some of his onslaughts are entertaining and amusing as when he speaks of the "ophthalmic surgeon fast becoming a stranded relic of medieval medicine" and refers to ophthalmoscopic textbooks as "graveyards of buried theories" but they lose in value because of their intemperance of expression. Rhetorical fireworks are not arguments, and appeal to the ear rather than the intellect. He has the faculty of putting forth his ideas at times in a striking, epigrammatic form as for example "the first duty of the ophthalmic surgeon is to prevent ophthalmic surgery," and the "people's ignorance of eye-strain consequences is second only to that of oculists and leading physicians." It seems scarcely credible to me that "hundreds of oculists prescribe glasses without examination of the eye-grounds" nor can I believe that "except in the offices of a dozen or more oculists the vicious influence of low degree of astigmatism is entirely unknown." He is severe upon the equipment possessed by many ophthalmic surgeons. "The wretched instruments usually found in oculists' offices make it impossible to do expert or exact refraction work, and are a ludicrous disgrace to an inventive people. Any machine shop, engineer's office or cobbler's bench so outfitted would be sold out in a month."

When I read some of his virulent onslaughts and vehement denunciations I am forced to think that the good Doctor is taking himself a little too seriously, and as a result of endeavoring for too long a time to carry a little too much of the world's burdens on his shoulders is growing more pessimistic with the years concerning his chosen profession and is missing entirely the mellowing influence of age. While such language may be sometimes needful and is at times even enjoyable, I cannot help but agree with Robert Louis Stevenson when he says "With a little more patience and a little less temper, a gentler and wiser method might be found in almost every case; and the knot that we cut by some fine heady quarrel-scene in private life, or in public affairs by some denunciatory act against what we are pleased to call our neighbor's vices, might yet have been unwoven by the hand of sympathy."

While we do not agree with all the Doctor has written, regret his tendency to be an extremist which has done his cause more harm than good, and deprecate at times his manner of attempting to teach the truth as he sees it, yet I would not close this review without making an acknowledgement of the good which he has accomplished by his numerous writings and especially those which have appeared in these volumes of Biographic Clinics in making the profession and even some of the ophthalmologists, not to speak of the laity, appreciate more fully than ever before the real importance of the "influence of visual function upon health."

W. E. B.

Hand Book of Obstetrics by R. Cadwallader, A. M., M. D. Assistant in Obstetrics in the Medical Department of the University of California. 360 pages, 104 illustrations in the text. Price $2.00. F. A. Davis Co., Publishers, Philadelphia. 1908.

The author has attempted to condense into a small volume the essentials of obstetrics by eliminating all matter which seemed extraneous and all which dealt with theory and original research. In doing this he has probably erred on the other side, and has given too little attention to certain very important subjects. The chapters on the physiology of reproduction, pregnancy, and labor are concise and well written, while those devoted to obstetric operations leave much to be desired. In the use of forceps the older and cruder methods are described and advised. The illustrations are not new. As a textbook for medical students this volume could not be recommended as it is too incomplete, and the descriptions are not explicit enough. At the same time we must commend the author's attempt to produce a really practical book. A. H. B.

Studies in Rabies. Collected Writings of Nathaniel Garland Keirle, A. M., M. D., D. Sc., Professor of Medical Jurisprudence and Emeritus Professor of Pathology, College of Physicians and Surgeons. Director of the Pasteur Institute, Baltimore, Md. With an Introduction by Wm. H. Welch and a Biographical Sketch by Harry Friedenwald. Testimonial Edition. Baltimore, 1909.

This volume of the collected writings of one of the earliest workers on hydrophobia in this country is an appropriate testimonial, by the leading medical men of his native city, to a man of talent as well as of exalted and lovable character. Most of the subject matter has been published previously in various medical journals, but some of it appears now for the first time. Those who are especially interested in rabies will read it with profit, for Dr Keirle's work has added considerably to our knowledge of this subject and his appreciation of the Pasteur treatment of this disease has been attended with creditable success. To those whose interest embraces the broader plane of medical life and struggle it makes a peculiar appeal for it exemplifies the value of steady, faithful and self-abnegating work in one's chosen field. W. T. H.

A Treatise on Diseases of the Nose, Throat and Ear. By William Lincoln Ballenger, M. D., Professor of Laryngology, Rhinology and Otology in the College of Physicians and Surgeons, Chicago. New (2d) edition, thoroughly revised. Octavo, 930 pages, with 491 engravings, mostly original, and 17 colored plates. Cloth, $5.50 net. Lea & Febiger, Philadelphia and New York, 1909.

As stated by the author in his preface, the exhaustion of the first edition of his book within a year has given him an unexpected opportunity. For a book on a special field this is an exceptional record and author and publishers may well feel proud of the reception which has been accorded the book. This popularity, we feel sure, has been justly deserved as Ballenger's work was only presented after years of careful preparation. But though the first edition was good the second edition is certainly better. Many chapters have been entirely rewritten and certain operations which did not bear the test of time and experience have been omitted—e. g., the submucous resection of the turbinals, which is conspicuous by its absence. Much new material has been added—notably the discussion of the diagnosis and treatment of the diseases of the labyrinth. On this subject the previous edition gave but little. We feel, however, that the author is not always quite clear in his presentation of this somewhat difficult and abstract subject and that the paragraphs dealing with nystagmus are hardly presented with the simple forceful style characteristic of the remainder of the book. The law stated on page 608 can hardly be attributed to J. R. Fletcher as the author states.

The illustrations, so notable a feature of the first edition, have been increased in the present work, which according to the author's preface contains 125 new drawings.

In our review of the first edition we expressed considerable doubt as to the possibility or advisability of presenting so extensive a subject in a single volume. We still cling to this opinion. But if a single volume is what the profession demands, certainly that demand is well satisfied by the work in question and the author is to be congratulated on his happy solution of a most difficult problem. Altogether the book is an excellent one. The style is lively, clear and forceful and the triad of subjects well handled. We can heartily commend the work to physicians and students.

W. B. C.

The Psychic Treatment of Nervous Disorders, Sixth revised Edition. By Dr. Paul Dubois, Professor of Neuropathology at the University of Berne. Translated by Smith Ely Jelliffe, M. D., Ph.D., Visiting Neurologist, City Hospital; Instructor in Materia Medica and Therapeutics, Columbia University, New York; and William A. White, M. D., Superintendent Government Hospital for the Insane, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University. Octavo, cloth, 485 pp. Price $3.00 net; by mail $3.15. Funk & Wagnalls Company, New York.

This book in the earlier editions attracted a great deal of attention and is probably the most satisfactory work on psychotherapy, as the author is considered the greatest expounder of this form of treatment. The work is one that should be read by every physician, for not only will it aid him in treating a class of patients that are notoriously hard to handle, but it will explain to him many of the successes attained by the Eddyites, Worcesterites and other medical religions and lay quack treatment.

The author makes a convincing plea for the study of psychology in our medical schools, for proper knowledge of psychology and psychopathology would prevent the surgeon and gynecologist from performing many unnecessary operations and adding the strain of new psychic trauma to the already overloaded nervous system. As Dubois says, "But no one ever thinks of that. A celebrated gynecologist, who, however, seems to still be wearing the blinders of the young specialist, discovers an hypertrophy of the uterus, a slight ulceration of the cervix, a little inflammation of the uterus. Behold the cause of all the trouble! The patient may insist in vain on the moral causes of her nervousness; the operator will not let himself be thwarted; he amputates and cauterizes, performs curretages of the uterus, and expects to see the nervous symptoms disappear. He deludes himself into thinking that he has obeyed the adage: the cause being removed the effect will be done away with *(sublata causa tollitur affectus.)* But, to his great astonishment, nothing of the sort occurs."

"The patient falls into the hands of a specialist in the treatment of diseases of the stomach. This latter is a serious physician who is not content with a superficial examination. Just think; he syphons the stomach, analyzes the gastric juice, injects air into the organ, and notes its limits with a blue pencil. With an expert hand he produces succussion, and then declares: 'You have a dilatation of the stomach, with hypoacidity; you will never be well as long as the motility and the chemistry of your stomach are impaired!' He prescribes a bandage to support the sagging stomach, and a dry diet, and notes carefully what foods should be avoided. He makes such a long list of them that he would have lost less time in noting those that were permitted."

"The patient grows thinner and thinner, and becomes weak. She suffers, it is true, a little less with her stomach because she does not demand much of this organ, but she is more nervous than ever."

"Electricity is the next thing on the program. The patient sits down on the insulated stool of the static machine. The buzzing, the static brush, the disruptive discharges are all going to act upon her neurones as upon the 'coherer' of wireless telegraphy. And it is with a feeling of profound content that the neurologist runs his electrode up and down over the surface of the body, without allowing himself to be at all disconcerted by the smile—which is oh! so skeptical—of the patient. Frankly of the two it is difficult to decide which is subject to the greater vagary."

"But it is time for this to change. And, while continuing to use for the good of our patients the physical and medicinal measures at our disposal, we must recognize the influence of the mind; we must analyze this action, and learn to take advantage of this helpful measure, which has been too long neglected."

"The specialist in neurology and psychiatry is not the only one who ought to sharpen his faculties of psychological observation and resolutely enter the path of psychotherapy. The surgeon ought to know these psychopathic conditions if he wants to avoid unfortunate complications. Have we not seen them remove the appendix of patients seized with hysterical attacks of pain, open the abdomen of a confirmed hypochondriac to prove to him that he did not have cancer, perform a gastro-enterostomy in a nervous dyspeptic, and do an ovariotomy on an hysterical patient? They even perform operations to cure neurasthenic patients whose mental condition is disturbed by morbid introspection."

"And in the numerous specialties whose existence is justified by the fact that they call for a certain operative routine, those of the oculist, the rhinologist, the laryngologist, would it not be better to operate and cauterize and scrape less, and to recognize, even in those ills which seem so localized, the enormous influence of unhealthy autosuggestion and the power of mental representations, and to remember those diathetic conditions which often render local therapy illusive?"

"In conclusion, the practitioner of small towns and country places, who must give to everybody at least the first help, ought to know all things, and cannot afford to ignore this medicine of the mind. He knows his patients better than the city man does his patrons. He is acquainted with their ordinary mental condition and their hereditary influences; he almost lives with them. Naturally he lacks the time to deliver long psychotherapic conversations to them, but if he is a psychologist he will have no trouble in distinguishing what originates in the mind and what is only physical."

"He does not need to be a wizard to perceive that his visit does more good than his medicines. He will see that all the good that he does lies in showing a warm sympathy and in giving counsels of healthy philosophy. In every land there appear brochures and articles in the papers, showing us that these truths are in the air, and that a new avenue is opening for medicine."

"Medical teaching of the twentieth century, without neglecting the conquests of the preceding one, will give a larger and larger place to rational psychotherapy. It will renounce the puerilities of hypnotism and suggestion in order to arrive at the education of the mind."

The reviewer heartily recommends this book as being one that will do any worker in the field of medical science a world of good.

W. B. L.

Functional Diagnosis, the Application of Physiology to Diagnosis. By Thomas G. Atkinson, M. D., Associate Professor of Neurology and Physiology, Chicago College of Medicine & Surgery; Professor and Head of Department of Physiology, Chicago College of Dental Surgery; Editor of the Medical Standard; Author of "Essentials of Refraction." Chicago Medical Book Co. Price $1.50.

The books aim to describe the normal functions, and explain symptoms and signs due to deviations from the normal, and to correlate these with the diseases in which they occur. The aim is a worthy one, but owing to the meagreness of the description and elucidations, and the bald and uninteresting method of handling the subject, little of value can be gained from it. As an aid to diagnosis "functional" or otherwise the book is worthless. There are numerous and glaring typographical errors, scarce a page escaping.

R. D.

The Practical Medicine Series. Vol. X. Nervous and Mental Diseases. Edited by Hugh J. Patrick, M. D., Professor of Nervous Diseases, Northwestern University Medical School, Chicago, and Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis, in the Northwestern University Medical School, Chicago. Cloth, pp 248. Price $1.25. Chicago. The Year-Book Publishers, 1909.

This brief and concise review of the year's literature on neurology will appeal to physicians for its practicability. The subjects have been attractively arranged and the illustrations well executed. Ten pages are alloted to a review of mental diseases, i. e., psychoses; biological classification, psychoanalysis, dementia praecox, and general paresis. As a ready reference this little volume will be found exceedingly useful.

H. H. D.

A Treatise on the Principles and Practise of Medicine. By Arthur R. Edwards, M. D., Professor of the Principles and Practise of Medicine and Clinical Medicine in the Northwestern University Medical School, Chicago. New (second) edition, thoroughly revised. Octavo, 1246 pages, with 100 engravings and 21 full-page plates in colors and monochrome. Cloth, $5.50, net; leather, $6.50, net. Lea & Febiger, Philadelphia and New York, 1909.

That a second edition of Edwards Principles and Practise of Medicine has been brought out by the author is sufficient evidence that there is demand for it. The text is a good one and about all that could be demanded by the practitioner and student of medicine. It compares most favorably and is in no way inferior to the several older standard works of the same scope and nature. Some of the chapters on the infections are strikingly explicit and full, and the chapter on tuberculosis deserves especially favorable comment. Many of the cuts and illustrations are new and good. The plates of which there are many are also valuable. The book is full of statistics and references to the work done by others; but at the same time there are but few references to the papers, theses or books from which these quotations and figures are collected, and one wonders why the author could not add this additional information. If it is worth while to state that Jaccoud estimated a mortaliy of 20% in 50,000 cases of typhoid fever would it not be worth while also to add a word in parenthesis or footnote citing the reader to the paper from which these figures were collected? M. J. L.

The Prevention and Treatment of Abortion. By Frederick J. Taussig, A. B., M. D., Lecturer on Gynecology, Medical Department, Washington University; Obstetrician to the St. Louis Maternity Hospital; Gynecologist to the St. Louis Skin and Cancer Hospital; Fellow of the American Gynecological Society, and American Association of Anatomists. Illustrated. C. V. Mosby Co., St. Louis, Mo. 1910.

This monograph of 180 pages, while intended primarily for the general practitioner, who has to deal with the great majority of the cases of abortion or previable expulsion of the ovum, can nevertheless be read with profit by the specialist as well. The author points out that since the publication by T. Gaillard Thomas in 1895, of a series of six lectures upon this subject no comprehensive monograph upon abortion has appeared in English, although in the interval our views have been considerably modified. The frequency of the accident and the greater liability to complications after abortion as compared with labor at term, warrant a fuller consideration of the matter than is possible in the space available in most obstetric textbooks.

The subject is fully discussed from various standpoints. Part I considers the frequency of the condition, the anatomy, pathology, etiology, symptoms, diagnosis and prognosis. Part II deals with prophylaxis and Part III discusses the treatment. An appendix takes up the subjects of missed abortion, the various moles, therapeutic abortion, etc.

The treatment has been well presented and embodies a great many useful suggestions. The indications for the various procedures advocated are clearly defined and the advice seems to be very rational. The author takes a decidedly conservative stand upon questions of operative procedure in septic cases, the wisdom of such a course on the part of the general practitioner being obvious.

In speaking of the induction of abortion no mention has been made of the time-honored introduction of a catheter into the uterus to stimulate contractions, the introduction of gauze, however, is advised under certain conditions.

A short discussion upon the prevention of conception is included as the author considers such a procedure justifiable in certain cases. Under the head of prophylaxis, stress is laid upon the necessity of education of the public as to the danger of abortion and the existence of life prior to the occurrence of "quickening"; also the necessity for reporting to the health authorities every recognized case of abortion, if the steadily increasing ratio of abortions to full-term births is to be arrested. Legislation that would facilitate the admission of evidence in the courts would further aid in lessening the prevalence of criminal abortion. The book can be recommended as a very satisfactory exposition of the subject.

W. H. W.

Surgery of Childhood, by Sidney Freeman Wilcox, M. D., Professor of Clinical Surgery, New York Medical College and Hospital for Women. Consulting Surgeon to The New York Hospital for Women, The Laura Franklin Free Hospital for Children, The New York Ophthalmic Hospital, The Flower Hospital, The Memorial Hospital for Women and Children, Brooklyn, The Saint Mary's Hospital, Passaic, N. J., The Wesson Memorial Hospital, Springfield, Mass., The Grace Hospital, New Haven, Conn. Boericke & Runyan, New York and Philadelphia, 1909.

This volume should be entitled "A Few Desultory Remarks on the Surgery of Childhood." The different subjects are taken up without any logical order, treated in a very sketchy and unscientific manner and should never have been dignified by a publication as a book. There is so little of worth in the volume that it does not merit a review. R. H. B.

The Practical Medicine Series. Comprising 10 volumes of the year's progress in medicine and surgery. Under the general editorial charge of Gustavus P. Head, M. D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Volume IX. Skin and Venereal Diseases, Miscellaneous Topics. Edited by W. L. Baum, M. D. and Harold N. Moyer, M. D. Series 1909. The Year Book Publishers, Chicago, Ill. Price $1.25.

This volume presents a review of progress along the lines indicated during the past year. Among the topics considered in the portion assigned to dermatology are interesting articles on pellagra, leprosy and special dermatoses. Under venereal diseases the treatment of gonorrhea and chancroid is considered from the latest view-point, and there are also abstracts of work done on the Wassermann reaction in syphilis.

The miscellaneous section includes reviews of many varied articles, among them views on heredity, physical degeneration, effects of smoking, alcoholism, longevity, body weight, the physician and the press, besides other medicolegal and medicoethical matters. As a review the volume makes an interesting summary. H. L. S.

Acknowledgements.

A Textbook upon the Pathogenic Bacteria for Students of Medicine and Physicians. By Joseph McFarland, M. D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. With 211 illustrations, a number of them in colors. Sixth edition, thoroughly revised. W. B. Saunders Co., Philadelphia and London. 1909.

Surgery, Its Principles and Practise. By Various Authors. Edited by Wm. Williams Keen, M. D., LL. D., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia, and John Chalmers DaCosta, M. D., Professor of the Principles of Surgery and the Clinical Surgery, Jefferson Medical College, Philadelphia. Volume V. With 550 illustrations, 45 of them in colors. W. B. Saunders Co., Philadelphia and London. 1909.

A Textbook of the Practise of Medicine. By James M. Anders, M. D., Ph.D., LL. D., Professor of Medicine and Clinical Medicine at the Medico-Chirurgical College. Illustrated. Ninth edition, thoroughly revised. W. B. Saunders Co., London and Philadelphia. 1909.

Examination of the Urine. A Manual for Students and Practitioners. By G. A. DeSantos Saxe, M. D. Second Edition, revised. With numerous illustrations and colored plates, a number of them original. Philadelphia and London. W. B. Saunders Co. 1909.

A Textbood of Physiology for Medical Students and Physicians. By Wm. H. Howell, Ph.D., M. D., LL. D., Professor of Physiology in the Johns Hopkins University, Baltimore. Third edition, thoroughly revised. W. B. Saunders Co., Philadelphia and London. 1909.

Handbook of Obstetrics. By R. Cadwallader, A. M., M. D., Assistant in Obstetrics, University of California, Medical Department, San Francisco, California. With 104 illustrations in the text. Price $2.00. F. A. Davis Co., Publishers, Philadelphia. 1908.

Handbook of Modern Treatment and Medical Formulary. A condensed and comprehensive manual of practical formulae and general remedial measures. Compiled by W. B. Campbell, M. D. Formerly Resident Physician at the Methodist Episcopal Hospital of Philadelphia. Price $2.50. F. A. Davis, Publishers, Philadelphia. 1909.

Outlines of Chemistry. A Textbook for College Students. By Louis Kahlenberg, Ph. D., Professor of Chemistry and Director of the Course in Chemistry in the University of Wisconsin. Price $2.60 net. The Macmillan Co., New York, 1909.

The Body at Work. A Treatise on the Principles of Physiology. By Alex Hill, M. A., M. D., F. R. C. S. Sometime master of Downing College, Cambridge. With 46 illustrations. Edward Arnold, London. 1908. Longmans, Green & Co., New York.

Public Health and Marine-Hospital Service of the United States. Bulletin No. 61. Quantitative Pharmacological Studies: Relative Physiological Activity of Some Commercial Solutions of Epinephrin. By. W. H. Schultz.

Diagnostic Therapeutics, a Guide for Practitioners in Diagnosis by Aid of Drugs and Methods other than Drug-Giving. By Albert Abrams, A. M., M. D., Consulting Physician to the Mount Zion Hospital and the French Hospital, San Francisco; Formerly Professor of Pathology and Director of the Medical Clinic, Cooper Medical College (Medical Department of Leland Stanford Junior University), San Francisco. With 198 illustrations and 1040 pages. Cloth, price $5.00. Rebman Co., New York.

Antipyrin, Acetanilid and Phenacetin. Are they Harmful Remedies? Are they Habit-Forming Drugs? By Uriel S. Boone, Ph. G., M. D., St. Louis, Mo.

Ohio State Board of Medical Registration and Examination.

Examination Papers December 7, 8 and 9, 1909.

ANATOMY.

1 Describe the scapula. 2 Name and locate the ductless glands. 3 Briefly describe the reproductive system of the male. 4 Give the surgical anatomy of the gall-bladder. 5 How many bones in an upper extremity? Name them. 6 What bone in the human skeleton first shows signs of ossification? 7 What structures enter into the formation of a joint? 8 Name the muscles that move the eyeball. 9 Give origin, course and distribution of intercostal nerves. 10 With how many kinds of nerves is the tongue supplied? Name them.

PHYSIOLOGY.

1 Define metabolism. 2 What is the difference in food requirements,

between adolescence and adult life? 3 Where and by what secretions is meat digested? 4 At what point does intestinal and pancreatic digestion cease and why? 5 Of what is normal feces composed and what is its source? 6 What is lymph and what is its relation to nutrition? 7 Describe the physiology of the larynx. 8 What is asphyxia and how does it produce death? 9 Describe the motor areas of the brain for the trunk and lower extremities. 10 What is the sympathetic nervous system and its function?

PATHOLOGY, BACTERIOLOGY AND HYGIENE.

1 Define fatty infiltration. 2 Name four different kinds of pigmentation. 3 What type of carcinoma is most common in the stomach? 4 What is a cyst and what are the different forms? 5 Describe the microscopical appearance of glioma. 6 Name four pathogenic cocci and what disease they cause. 7 Name the specific cause of syphilis; malaria; diphtheria; pink-eye; scrofula. 8 What are the sanitary requirements in house plumbing? 9 Name three methods of purifying water. 10 What is sewer-gas? What evils may arise from it?

CHEMISTRY.

1 Name the halogens and give the properties and uses of the one you consider the most important. 2 Explain the action of acids and alkalies on the fluids of the tissues. 3 What is the effect of the calcium salts in the system and for what conditions are they especially useful? 4 What are the tests for stomach hyperacidity? 5 What kind of water would you consider pure for drinking purposes? What impurities could you detect by chemical tests? 6 How does alcohol act as a poison? 7 What are alkaloids? Name five. 8 What is an antiseptic? Name five and briefly explain their action. 9 Give a physiological and a chemical antidote for morphin. Explain the action of each. 10 Name four mineral poisons and give their antidotes.

PRACTISE OF MEDICINE.

1 Give treatment, hygienic and medicinal, of catarrhal bronchitis, non-tuberculous. 2 Give treatment, hygienic, dietetic and medicinal, of Bright's disease. 3 How does remittent fever differ from typhoid fever? 4 Give treatment for chronic cystitis. 5 Give the etiology, symptoms and treatment of diabetes mellitus. 6 What is locomotor ataxia? Give its causes and treatment. 7 How would you treat a case of erysipelas? 8 State the probable location of a gall-stone from the attendant symptoms. 9 Name some of the sequelae of adenoids. 10 How would you treat prolapse of the rectum?

MATERIA MEDICA AND THERAPEUTICS (REGULAR).

1 Name the alkaloids of veratrum viride, give their physiologic action and therapeutic indications? 2 From what source is salicylic acid obtained? Describe its physical properties, state how it should be administered and some indications for its use? 3 Give the most important uses in medicine for sulphur. 4 Given, an acutely dilated stomach with retention of food, how should it be treated? 5 Give a physiologic reason for your conclusion concerning the value of external applications to the chest in diseases of the lungs. 6 Write a prescription for a man about 35 years old, of sedentary life, who is a large eater of what he calls "the substantial foods," who suffers from headache a good deal. 7 How is quinin curative in malarial diseases? 8 How would you treat a case of poisoning from digitalis? 9 How do diuretics produce their effect? 10 When would you use the x-ray therapeutically and how treat the burn if such a case came to you?

MATERIA MEDICA AND THERAPEUTICS (HOMEOPATHIC).

1 Name two nosodes used in the treatment of tuberculosis. What are the results? Is this homeopathic? 2 In treating a case homeopathically, how do you determine the size of the dose? 3 Differentiate aconite and

gelsemium. 4 Give the chief homeopathic indications for china? 5 Compare the cough symptoms of phos. and tart. emet., bryonia and kali bich. 6 Name two remedies most likely to be called for in the onset of a well defined case of pneumonia? 7 Differentiate aloes and merc. cor. in the treatment of dysentery. 8 How and from what is the tr. of arnica prepared; tr. of phosphorus; tr. of apis? 9 What is the strength of the tr. of lachesis and from what prepared? 10 When would you use the x-ray therapeutically and how treat the burn if such a case came to you?

MATERIA MEDICA AND THERAPEUTICS (ECLECTIC).

1 Give properties, uses and doses of apocynum. 2 Give specific indications for bryonia. 3 In what class of diseases, and in what form and dose, would you prescribe iris? 4 What are the indications for pulsatilla? 5 What is the botanical name for black cohosh and in what conditions is it useful? 6 What indications would cause you to prescribe chionanthus? 7 When would you prescribe digitalis? 8 What is the botanical name of lily of the valley? What are its uses? 9 What are the uses of saw palmetto? 10 When would you use the x-ray therapeutically and how treat the burn if such a case came to you?

DIAGNOSIS.

1 What pathologic significance is given to the plantar reflex (Babinski phenomenon)? 2 A general distention of the abdomen, what pathologic conditions may it suggest? 3 When blood is found in the urine, how can its origin be determined? 4 Define rales, mention their principal types and give their pathologic significance. 5 What indications are derived from an increased dulness of the cardiac area toward the left and downward?

SURGERY.

1 What is the maximum dose of cocain when hypodermically administered? 2 What measures would you employ should the patient show untoward symptoms during chloroform anesthesia? 3 Make a diagnosis of anterior dislocation of the hip-joint. How reduce it? 4 Diagnose appendicitis. 5 How would you treat an acute strangulated hernia by other methods than by operation? 6 Should a tumor of the breast ever be treated palliatively? 7 Diagnose empyema. Give two causes. 8 Diagnose pyosalpinx. Name the two most prevalent causes, briefly how treated? 9 Give the relations of the ureters to the uterus and state what you would do if one of the ureters should be severed during operation? 10 Describe the mode of administration of serumtherapy in cerebrospinal meningitis.

OBSTETRICS.

1 Briefly state what can be done to prevent toxemia of pregnancy 2 Make a diagnosis of accidental hemorrhage; give some of its causes and suggestions for its control. 3 Explain the causes of the fetal mortality incident to breech presentation. 4 What conditions indicate the use of the forceps; what have you to say concerning its frequent use? 5 Make a differential diagnosis between ascites and ovarian cysts. 6 What is the history of retrodisplacements of the uterus where pregnancy exists? 7 Discuss briefly the use of mechanical supports in uterine displacements. 8 Give the signs and symptoms of pelvic abscess. 9 Give the clinical history of fungous endometritis; what treatment do you advise? 10 Describe the development of the heart.

DERMATOLOGY, SYPHILOLOGY AND DISEASES OF THE EYE, EAR, NOSE AND THROAT.

1 Define eczema and describe eczema of the hairy scalp. 2 Mention the differential characteristics between psoriasis and eczema. 3 How would you treat scabies? 4 Define initial lesion of syphilis and mention its principal varieties. 5 Describe papular syphilis. 6 Mention the fundamental alterations of the eyeball causing myopia and how is it corrected

by lenses? 7 Describe iritis, its varieties and treatment. 8 Mention the causes which produce bleeding from the nasal cavities (epistaxis) and how it can be checked. 9 Describe acute suppurative inflammation of the middle ear and the dangers therefrom. 10 Describe tuberculosis of the larynx.

Medical News.

Privat-Docent Heinrich Neumann of Vienna has been giving a course in advanced otology in Cleveland.

Allen T. Burns, General Secretary of the Pittsburg Civic Commission, on January 22, 1910, delivered the last of the special lectures of the Public Course in Sociology of the Western Reserve University. The subject was "Some Results of the Pittsburg Survey." The lecture, which proved of great interest, was given at the Cleveland Medical Library.

St. John's Hospital Annual Banquet: The annual banquet to the members of the staff and alumni and physicians interested in the welfare of St. John's Hospital, Cleveland, was given by the Sisters of St. Francis in charge of the hospital Wednesday, Jan. 19, 1910. A very sumptuous banquet was served. G. F. Thomas acted as toastmaster on the occasion. The following gentlemen responded to the toasts: J. V. Gallagher, C. B. Parker, A. C. McGannon, E. O. Houck, Geo. White, R. K. Updegraff and M. A. Boesger. A delightful evening was spent by all.

The Lakeside Hospital Alumni Association held the thirteenth annual meeting Wednesday, January 19, 1910. In the afternoon a medical clinic was given by Chas. F. Hoover. The business meeting at 6 p. m. was followed by a banquet and an address by Harvey Cushing of Johns Hopkins Hospital, Baltimore, who gave an extremely interesting paper upon "Brain Surgery," illustrated with a stereopticon. The following officers were elected for the ensuing year: President, John Phillips; Vice President, E. J. Lawrence; Secretary-Treasurer, Herbert Thomas; Member of the Executive Committee, Hunter Robb.

The Lakeside Hospital Medical Society held its forty-fourth monthly meeting on Wednesday, January 26, 1910. The following program was presented: 1. Presentation of a Case of Carcinoma of the Tongue, A. Pomeroy. 2. Presentation of a Case of Intermittent Closure of the Cerebral Arteries, C. L. Cummer. 3. Report of Cases and Exhibition of Specimens of Ovarian Tumors, H. Dittrick. 4. Presentation of a Case of Diabetic Gangrene of the Leg, C. W. Wycoff. 5. Report of a Case of Fibroid with Infantile Uterus and a Case of Multilocular Glandular Cyst of the Ovary with Pyosalpinx, J. T. Smith. 6. Exhibition of Pathologic Specimens: (a) Gangrene of the Lung. (b) Carcinoma of the Esophagus, A. Ellis.

The St. Alexis Hospital Alumni Association held the eighth annual banquet at the Hollenden Hotel, Thursday, January 13, 1910.

The Charity Hospital Medical Society held its regular monthly meeting Wednesday, December 8, 1909. The program was as follows: 1. Report of a Case of Empyema, B. S. McClintic. 2. Presentation of Interesting Cases, J. D. Knox. 3. Report of Interesting Cases, A. N. Dawson. 4. Fractures at the Base of Skull, F. E. Bunts. The following officers were elected for the ensuing year: President, E. O. Houck; Vice-President, J. S. Tierney; Secretary, R. A. Bolt.

At the regular monthly meeting, held on January 12, 1910, the following program was presented: 1. The High Operation for Cesarean Section with Report of a Recent Case, W. H. Humiston. 2. Foreign Body Obstructing Larynx, with Report of an Instructive Case, S. H. Monson. 3. Report of Injuries to the Forearm in Children, F. C. Herrick.

The Stark Co. Medical Society held the annual meeting at Canton, Tuesday, January 18, 1910. The following program was presented: 1 Diseases of Women and Children, E. J. March, Canton; 2 Sanitation and Hygiene, J. P. DeWitt, Canton; 3 Obstetrics, S. S. P. Barnes, Massillon; 4 The Year's Advances in Ophthalmology, G. L. King, Alliance; 5 Medical Ethics and Legislation, J. F. Kahler, Canton; 6 Prevailing Diseases, H. E. Corl, Middlebranch. The President reported an average attendance of 40% of the enrollment for the past year. The following officers were elected for 1910: President, F. C. Miller; Secretary-Treasurer, G. F. Zinninger; Members of Executive Committee, E. O. Morrow, G. L. King, E. J. March, S. S. Barnes and H. E. Cobb.

The Lorain County Medical Society held its regular monthly meeting at the City Hall, Elyria, January 11, 1910. The program was as follows: 1. The Use of Lactated Milk in Infantile Diarrhea, S. S. Cox. 2. Touring Europe on a Motorcycle, A. M. Webster.

The Staff of the Elyria Memorial Hospital held the regular monthly meeting at the hospital Monday, January 17, 1910. Wm. B. Hubbell read a paper entitled "Is the Physician a Hemiplegic?" (Medical and Business Ability of the Physician). O. T. Maynard discussed "The School Examination of Children."

The Erie County Medical Society held its annual banquet at De Lor's restaurant, Sandusky, January 26, 1910. Pres. Snyder of Toledo, Councilor Ford and H. G. Sherman of Cleveland, and the wives of many of the members were the guests of the Society.

Wm. D. Hoyer succeeded Henry Schoepfle as Health Officer of Sandusky, Jan. 1, 1910.

H. D. Peterson succeeded Fred Schoepfle as Police and Fire Surgeon and City Physician of Sandusky, Jan. 1, 1910.

The Ashtabula County Medical Society held its forty-ninth regular meeting at Ashtabula, Tuesday, January 4, 1910. The program was as follows: 1. Treatment of Infections by Vaccine Therapy, C. L. McDonald, Cleveland. 2. Nostrums vs. U. S. P. and National Formulary Preparations, B. C. Eads, Conneaut. The meeting was well attended and aroused great interest.

B. J. Baxter, Conneaut, was appointed Health Officer by the Mayor to succeed W. W. Wetmore, resigned.

William J. Robinson, Editor of the Critic and Guide, The American Journal of Urology, and Therapeutic Medicine, has purchased the Chicago Clinic which has had an uninterrupted existence for 23 years (though known during the past year under the title of Practical Therapeutics) and has consolidated it with Therapeutic Medicine. The consolidated journal will be published monthly and it is believed that under the active editorship of Dr Robinson it will become one of the strongest and most important publications in America. The publication office is located at 12 Mt. Morris Park W., New York.

The Canadian Medical Association has arranged with Dr Andrew McPhail to act as editor of the proposed new journal of the Association, the first number of which is to be issued in the near future.

The Northwestern Ohio Medical Association adopted the following resolution at a recent meeting.

Whereas, The President of the United States in his annual message to Congress has recommended the establishment of a National Bureau of Health, and

Whereas, The above recommendation has been endorsed by the medical profession of the United States, and is to be most highly commended in conserving the economic and social resources of our citizens, therefore, be it resolved that the Northwestern Ohio Medical Association, at its sixty-fifth session endorse this recommendation and urge its early adoption.

The Ohio State Board of Medical Registration, on the recommendation of the Stark County Medical Society, recently reinstated J. N. Nelson of Alliance. The board reorganized by electing S. M. Sherman, President; E. J. Wilson, Vice President and Treasurer; George H. Matson, Secretary.

The Academy of Medicine of Toledo and Lucas County held its annual meeting Friday, January 7, 1910. The reports of the officers of the Academy and of the various sections, and the reports of the standing and special committees were presented. The following officers were elected for 1910: President, John G. Keller; Vice-President, Clarence D. Selby; Secretary, Chas. F. Tenney; Treasurer, Louis F. Smead; Financial Secretary, Edwin D. Tucker; Trustees, James A. Duncan, C. Watson, C. N. Smith, Walter H. Snyder, James Donnelly; Censors, John G. Keller, Charles W. Moots, E. I. McKesson, Homer H. Heath, Sidney D. Foster; Delegates to the Ohio State Association, Charles W. Moots, Walter W. Brand, Sidney D. Foster.

The Pathological Section of the Academy met Friday, January 14, 1910. The following program was presented: 1. X-Ray Demonstration of Two Ankle Fractures, C. D. Selby. 2. Treatment of Leg Ulcer, C. G. Souder. 3. Occipitoposterior Positions, L. E. Kerr. The following officers were elected for the ensuing year: Chairman, C. G. Souder; Vice-Chairman, J. Patterson Gardiner; Secretary, John A. Wright, Jr.

Charles M. Harpster and P. J. Bidwell, both of Toledo, sailed January 5 for an extended stay abroad.

C. S. Ordway, Toledo, was married December 24, 1909, to Marian Sweet of Escanaba, Michigan.

Bernhard F. C. Becker has been appointed Health Officer of Toledo in place of J. C. Reinhart who, for political reasons, lately resigned.

C. W. Moots, of Toledo, addressed the ninth annual institute of the Washington Township Farmers' Association January 7 on the subject, "Products of Milk." Dr Moots is chairman of the Milk Commission of Toledo, which organization has just closed a very successful year.

The Staff of St. Vincent's Hospital, Toledo, has issued an ultimatum against rats—those rodents which so universally infest the hair of our well-dressed women.

J. H. Jacobson, of Toledo, who for the past 11 years has served as surgeon to the Lucas County Infirmary, has been succeeded by A. J. Hammer.

The Regents of the Medical Department of the University of Michigan are acting on a resolution to move their senior year work to Detroit.

The School Board of Toledo is investigating systems of medical inspection for the purpose of formulating plans for such inspections in the Toledo schools.

A. C. Graham, formerly of Kansas City, Mo., has taken an office with J. D. Ely, Oak and Fasset Streets, Toledo, Ohio.

D. W. Philo, of Woodville, Ohio, is holding afternoon office hours in the office made vacant by the death of S. W. Beckwith, Toledo.

At the Muskingum County Medical Society meeting in December the following papers were presented: 1. Some Points in the Diagnosis and Treatment of Syphilis, C. M. Rambo. 2. Pellagra, J. C. Crossland. W. A. Melick showed a very interesting specimen of a large ruptured aneurism of the arch of the aorta. The rupture occurred into the left lung completely filling it.

Hugh Lorrimer has recently located in New Concord.

The appointment of E. C. Brush, Zanesville, as First Lieutenant, Medical Reserve Corps, U. S. A., has been confirmed by the Senate. G. W. Crile of Cleveland and E. C. Brush are the only Medical Reserve Corps officers in Ohio.

C. M. Zenhart, Zanesville, is confined to the Good Samaritan Hospital with typhoid.

Stowell B. Dudley has recently sold his practice and property in Canton and, after some months of special study in New York City, will locate in the West.

The Richland County Medical Society held its annual banquet at the Southern Hotel, Mansfield, January 26. T. Clark Miller of Massillon addressed the meeting upon The State Medical Association. W. E. Loughridge spoke upon The Future of the Richland County Medical Society.

The Northern Tri-State Medical Association held its twenty-sixth semi-annual meeting at Ft. Wayne, Indiana, Tuesday, January 11, 1910. A very interesting program was presented, including a paper entitled "Surgical Diseases of Children as a Special Department," by S. W. Kelley of Cleveland.

The recent death of Dr Baas of Worms, the well-known historian of medicine, has suggested the following.

IN MEMORIAM.

Dr Johann Hermann Baas, Professor and Medicinalrat, honorably distinguished by his German medical colleagues as the "Nestor of Medical Historians," died at his home in the ancient city of Worms-on-the-Rhine, November 10, 1909.

Born in the market-town of Bectheim, Rhenish Hesse, October 24, 1838, Dr Baas acquired his early education in the schools of that vicinity and in the gymnasium of the neighboring city of Worms. Destined originally for the priesthood, the scientific lectures of Liebig, Karl Vogt, Moleschott, Buchner and others diverted his attention to the subject of medicine, and he received his medical degree from the University of Giessen in 1860. The early years of his practise were passed in various towns of Rhenish Hesse, but early in the 70's of the last century he settled in the city of Worms, which continued his home until his death.

In his day, although the University of Giessen announced in its curriculum lectures and an examination on the history of medicine, neither was actually given, nor was even an approved textbook on this neglected subject recommended to its students. It was not until Dr Baas had been in practise for several years that his attention was directed to medical history. A younger colleague had in his library a copy of Kurt Sprengel's "Versuch einer pragmatischen Geschichte der Arzneykunde," an heirloom from his father. Dr Baas had never seen or heard of the work, but, rather as a matter of diversion, borrowed the book and read it with surprise and delight. Astonished to discover so many interesting and important facts of which he had heard and knew nothing, he cultivated diligently the novel subject, and, as he humorously remarked, "In the effort to fill the immense gap in my medical education—I fell into it."

About the same period he began to experience the early symptoms of an insidious and progressive disease of the nervous system, which in its relentless advance confined him at first to the house, then to his office chair, and finally, after a course of 36 years, was the indirect cause of his death. This impairment of his physical ability seemed only to stimulate to increased activity a mind naturally vigorous, restless and independent, and the result of his earnest labor was soon seen in the publication of his well-known work: "Grundriss der Geschichte der Medicin und des heilenden Standes" (1876), which, revised and enlarged, appeared in an English dress in 1889 under the title: "Outlines of the History of Medicine and the Medical Profession" and for the last 20 years has been the standard work on medical history in this country. The original work was well received in Germany and led to an invitation from the Naturforscherversammlung of Cassel to the author to prepare for its next meeting a paper on the subject of Harvey and his discovery of the circulation. Unfortunately the precarious health of Dr Baas prevented the presentation of this paper in person, but it was published in 1878 under the title: "William Harvey, der Entdecker des Blutkreislauf, und dessen anatomisch-experimentelle Studie über die Herz- und Blutbewegung." This was followed in 1880 by a compendium of the history of medicine entitled "Leitfaden der Geschichte der Medicin," and in 1896 by his last treatise on this subject, "Die geschichtliche Entwicklung des ärztlichen Standes und der medicinischen Wissenschaften." These works, it is fair to say, laid the foundation of the recent increased interest of our profession in the subject of medical history.

It must not, however, be hastily inferred that Dr Baas, while an eminent medical historian, was a historian only. As early as 1874 he had staunchly advocated the contagiousness of pulmonary phthisis, and the practical bent of his mind soon led him to the study of physical diagnosis. This study resulted in the publication of his two well-known works, "Zur Percussion, Auscultation and Phonometrie" (1877), and "Medicinische Diagnostik" (two editions, 1877 and 1883), and in the invention of an improved stethoscope and pleximeter. In his later years Dr Baas also devoted much attention to ophthalmology, and was a frequent contributor to the current journals on this subject.

Finally, few men, of any age or country, have better illustrated in life the maxim *Nil humani a me alienum.* Dr Baas was a connoisseur in music and painting; equally interested in archeology and folklore and an honored member of the Wormser Altertumsverein. The popular German journals *Unsere Zeit, Gartenlaube, Kosmos, Blätter für literarische Unterhaltung, etc.,* welcomed numerous contributions from his practised pen. As a citizen he was a staunch defender of German interests and German honor, and displayed the deepest interest in the welfare and advancement of his adopted city, in which he was an energetic advocate and supporter of the Paulusmuseum and Paulusbibliothek, institutions which his physical infirmities, alas, never permitted him to enter. By his fellow citizens Dr Baas was held in the highest esteem, and but a brief period has elapsed since the celebration of his seventieth birthday offered to his medical and lay friends occasion for a happy demonstration of this affection in the time-honored German way which he loved. A well-earned recognition of his high personal character and varied accomplishments was likewise offered to the infirm Nestor by the provincial government of Rhenish Hesse, which honored him with the titles of "Professor und Medicinalrat."

For the writer, who for more than a quarter of a century has enjoyed the singular experience of an uninterrupted correspondence with Dr. Baas (whom he never saw), without a shadow of difference or a breath of disagreement, it remains only to lay upon the green grave at Bechtheim the tribute of this sincere appreciation of his life and character, and with bowed head and sad heart to join reverently in the earnest petition which marked the close of his simple obsequies:

"Heiliger Gottesfriede umschwebe dieses Grab."

H. E. H.

Deaths.

Maria A. Weiss, Cleveland, Ohio, died January 9.

Geo. L. Bowman, Lorain, Ohio, died January 10, 1910, aged 57.

Frank A. Stovering, Cleveland, Ohio, died January 11, aged 39.

Geo. Mitchell, Mansfield, Ohio, died December 17, aged 72.

John J. Weeks, Cleveland, died December 9, aged 81.

William W. Barber, Cincinnati, died December 20, aged 39.

William Murdoch, Akron, Ohio, died January 2, aged 67.

H. M. Wagner, Newark, Ohio, died January 3, aged 58.

Russell P. Pelton, Vermilion, Ohio, died January 9, aged 41.

Abram C. Moore, Cincinnati, Ohio, died January 7, aged 83.

Jesse L. Worley, Washington, Ohio, died January 6, aged 58.

Jacob Schneider, formerly of Cleveland, died in Daytonia, Fla., December 11, aged 64.

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The Use of the Hydrostatic Dilator in Obstetrics.

By A. J. SKEEL, M. D., Cleveland.

The present paper was suggested, not because of any new or startling uses of the dilating bag, but because my observation has shown that the hydrostatic bag is seriously neglected in private practise. The various uses of the bags are well known, and they are frequently employed by the obstetric specialist, but the general practitioner seems to regard them with distrust, a great deal of which can no doubt be traced back to the difficulties and disappointments with the bags in use a decade or two ago.

The Barnes' bag was disappointing in results, and came out of the cervix so easily that it often failed the doctor at a critical time.

The Champetier de Ribes' bag was difficult and somewhat dangerous to use, by its bulk frequently displacing the presenting part, etc.

The modern bag, however, requires only moderate skill for its use, is safe and entirely practicable for general work. The Voorhees' bag, which is among the best of those used at present, is inelastic, covered with canvas, strong enough to allow traction on its tube, and is cone shaped. Being covered with canvas makes it inelastic but does away very largely with the danger of intra-uterine rupture of the bag, an occasional source of serious trouble with the elastic rubber bags. The strength of the attachment of the tube is important since it allows of traction, either by the nurse, intermittently, or by the weight, constantly, as the operator prefers. They are made in four regular sizes of 10 c.c., 50 c.c., 100 c.c. and 200 c.c. capacity. The bags, as stated, are cone shaped, the base of No. 1 having a diameter

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Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, February 4, 1910.

of 3 cm. and that of No. 4 a diameter of 8 cm. If the bag is well filled it cannot come out until the cervix is dilated to the size of the base of the bag used. Their bulk is considerably less than that of the Champetier de Ribes' bag, consequently there is less danger of displacing the presenting part.

Some of the various conditions in which the use of the bags may be called for are as follows:

1. To induce labor for (a) preeclamptic toxemia; (b) cardiac incompetency; (c) contracted pelvis; (d) habitual death of the fetus.
2. For delayed cervical dilatation in (a) malposition or malpresentations, e. g., occiput posterior, face, breech or shoulder; (b) dry labor; (c) disproportion, as with a small pelvis and large child; (d) true primary inertia.
3. To produce rapid cervical dilatation in (a) eclampsia; (b) placenta praevia; (c) other conditions arising during labor requiring its termination.
4. To secure hemostasis, as in placenta praevia.
5. To dilate the lower genital tract.

The use of the bags for the induction of labor may be fairly said to rival the Krause method with the bougie. The bougie is somewhat uncertain in its results while the bags rarely fail to produce labor promptly, the technic of introduction offering about equal difficulties. The danger of producing infection is almost *nil* with either method, if properly used. The membranes are sometimes ruptured with the bougie but this rarely occurs with the bags. Labor is more prompt, and dilatation more rapidly secured with the bags: on the contrary, the use of the bags requires an extra pair of sterile hands. The bougie can be used without help while the bags require more constant attendance by the doctor than does the bougie. For convenience, therefore, use the bougie; for certainty and rapidity of action use the bags to induce labor.

It is particularly for the purpose of *hastening cervical dilatation* that I would urge their more general employment.

In malpresentations and malpositions, as breech, face, occiput posterior, or shoulder, in which the presenting part is a poor dilator, it is frequently advantageous to introduce a bag and secure prompt dilatation. Many of these cases if left to themselves take 24 to 48 hours for cervical dilatation and at the end of this time the patient is exhausted and labor is at a standstill. By introducing the bag early, cervical dilatation is secured, with the patient's vital forces still intact. Many a woman can deliver herself in this way, or will need only slight assistance, who, if left to herself, will require serious interference for delivery.

The early use of the bag often does away practically with the complicating dry labor which so often accompanies these conditions. In a face presentation, for instance, if the membranes rupture early, introduction of the bags secures cervical dilatation at a time when version is still one of the operations of choice. This is often a great advantage.

In simple dry labor as soon as it is certain that the undilated cervix is causing unreasonable delay, a bag should be introduced, and cervical dilatation completed. The prompt use of the bag, does away with the worst features of dry labor.

The method of F. Bauer which consists in the use of bags so constructed that the lost liquor amnii may be replaced with normal salt solution has been recently again urged by Bauer's assistant, Schallehn. The writer has had no experience with the method. More proof seems needed before this plan can be adopted.

In slight disproportion between head and pelvis, with the head free above the brim, in the early part of labor, slow cervical dilatation frequently exhausts the patient long before the termination of the first stage. In these cases the introduction of a bag may save 12 to 18 or even 24 hours of delay in the first stage.

I recently saw in consultation a patient who had been in labor three days. She was exhausted; the abdomen was distended, and the liquor amnii smelled horribly. The attendant had been waiting all this time for the cervix to dilate. Two hours' use of the bags, 48 hours earlier, would have eliminated the cervix as a factor in the case.

Some time ago I was called to deliver a face case with chin posterior in which the cervix had dilated slightly; the membranes had ruptured after only a few hours of slight pains. The family doctor had waited for the cervix to dilate before interference. After the patient had spent many hours of fruitless labor I was called. Attempts at flexion of the head failed and I was obliged to do version, in the face of considerable risk of a uterine rupture, in order to save the baby which was still alive. Had the bags been used to dilate the cervix after rupture of the membranes we could have operated at a time when flexion of the head would probably have easily succeeded, or failing that, version would have been a comparatively easy and safe procedure.

In eclampsia with a readily dilatable cervix, the bags are the method par excellence for cutting short the time actually consumed in labor and securing early evacuation of the uterus. In severe eclampsia with a hard, long, tough cervix many obstetricians would prefer doing vaginal Cesarean section, to waiting the necessarily long time before the uterus could be emptied with bags.

In placenta praevia the use of the bags for hemostasis has recently been lauded as being far preferable to the older plan of packing. It is perhaps in some cases to be preferred to packing but we should not be unduly enthusiastic over the supposed prospect of saving the babies in these cases. In placenta praevia, the abnormal attachment of the placenta has reduced the usually abundant supply of oxygen and nourishment for the fetus to the minimum. The more of the placenta attached over the neighborhood of the internal os the more its free supply is interfered with. This is not theory but is demonstrated by the small, undeveloped babies always found with central placenta praevia. They receive barely sufficient nourishment and oxygen to keep them alive. Now it is in just these cases that effectual hemostasis is necessary, and whether this hemostasis is effected by the gauze pack or by the hydrostatic bag, pressure must be made over the placental site and the uteroplacental exchange of gases still further interfered with. Consequently we must expect a high fetal mortality rate in placenta praevia regardless of what method we use to make the required pressure for stopping bleeding.

In some cases, no doubt, the bag will effectually stop bleeding without making pressure over so great a portion of the placental site as does the gauze pack; and many times the cervix may be more rapidly dilated with the bag than with the pack. Dr Lee, however, reports a maternal death in one of his own patients with a placenta praevia. In this case he introduced a bag and attached a weight to it, but the bag came out after a short time and the woman died from a rupture of the cervix, extending up to the body of the uterus. We must always remember the extreme friability of the cervix in placenta praevia. Another objection to bags is the possibility of concealed hemorrhage taking place. The time saved by their use is their greatest advantage. The exact value of the bags in this condition is still undecided. Hannes is enthusiastic over his results with them.

In primary uterine inertia no safer, better and surer means exists than the introduction of a bag and traction on it.

In old primiparae, or others with a narrow inelastic outlet, in whom severe laceration is greatly to be feared the hydrostatic dilator is invaluable. The vaginal outlet may be thoroughly prepared by actually pulling the various sizes of bags through, or a large bag may be left in the vagina for the advancing head to force through. This preliminary dilatation is in some instances very valuable.

The disadvantages of the bags are: (a) The danger of additional manipulations in the genital tract during labor; this danger is slight but real and cannot be avoided. (b) The danger of displacing the presenting part. (c) The danger of prolapsed cord. Correspondence carried on between Drs Barnes and Playfair in 1869 shows that thus early these unpleasant complications were known and dreaded.

For prolapsed cord the only remedy is watchfulness. Examine after each bag is expelled and particularly when the membranes rupture. We must remember, however, that prolapsed cord is a complication of small or deformed pelves and that it occurred in these conditions long before the bags were used. Bags do, however, probably increase its frequency. In my own work I have had two cases of prolapsed cord in which the bags were used. Both babies were saved, in the first case by replacing the cord and applying forceps, in the second case by rapid version.

In considering the technic, one point which I especially wish to urge is that any man who understands aseptic work can use the bags safely. There are two methods of introducing the bags:

1. The boiled bag is lubricated with sterile glycerin or vaselin, carefully folded and grasped with a forceps. This forceps may be the one made for the purpose or a long curved intrauterine dressing forceps of the Bozeman type may be used. The index and middle fingers of the left hand are introduced into the vagina, and if possible into the cervix. Then, carefully avoiding contact with the vestibule, the bag is passed on the fingers as a guide up to and then through the cervix. The forceps is removed and the bag held in place with the fingers until an assistant has filled it with sterile water. For this purpose I use a Broadhead syringe but a fountain syringe or other method serves equally well.

2. Another method is to introduce a perineal retractor, catch the anterior lip of the cervix with the volsellum forceps and introduce the bag into the cervix by sight.

I have never had an infection following the use of bags by either method.

In conclusion I wish merely to urge that any man who sees many obstetric cases will find the time and work spent in learning to use the bags amply repaid by his additional control over his labor cases.

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1002 Rose Bldg.

The Clinical Application of the Tonics.

By ROBT. POLLOCK, M. D., Cleveland.

However much the physician, especially he who belittles the value of drugs, may question the efficacy of this group, certain it is that to the average layman the word tonic has a distinctly mental uplift. In the early stages of his sickness he feels that "it is only a tonic he needs," and when he approaches convalescence his faith in this magic word has not abated and he looks to the tonic to put on the finishing touches in the restoration process. Let us see, in our discussion of this subject, if there is not a tangible foundation for this faith.

In this paper, while recognizing their importance, I shall not touch upon tonic measures other than drugs. Nor shall I speak of other than the tonic uses of those drugs discussed.

For convenience of handling, I shall divide these agents into four groups:

(1) Those helping the nutritive processes by improving the quality of the blood.
(2) Those favoring nutrition by stimulating glandular secretion.
(3) Those increasing the general tone of the nervomuscular apparatus.
(4) Those beneficially influencing nutrition by means not wholly understood but which seem to stimulate the nutritive processes too directly to allow our classing them as alteratives.

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In no place else in medicine can we administer with greater confidence or watch the results of our treatment with a more accurate scientific vision than in the treatment with iron of the anemias, more especially the primary anemias, of which we have an excellent example in chlorosis. Here the findings of the blood examinations usually parallel the progress in the patient's appearance and feelings. The three essentials to success are an accurate diagnosis, the giving of sufficient iron, and the guarding against constipation and other gastric or intestinal trouble. Of course I have no wish to ignore the value of hygienic adjuncts, but these cases improve under iron when we are unable to change either their habits or environment. The selection of the form of iron from three score or more of preparations need not embarrass, even though we do not all agree as to which is the best. Much of the good results of the past has been obtained with the tincture of the chlorid. While the more modern albuminates and peptonates are often better borne by the stomach and prove less injurious to the teeth, the question as to whether or not they are much more readily absorbed is still, I think, a debatable one. Between these extremes there are many eligible preparations of which I shall mention as salts of my preference the ferrous carbonate, in its various official forms, and the ferrous sulphate from which it is made. Blaud's pill has proved its worth for so long, and is obtainable in so practical a form and at so nominal a cost, that most practitioners would pin their faith to it were it not for the oft-recurring statements that this preparation to be active must be made thus and so: the inference being that otherwise made it is practically inert. Personally, I am convinced that I get results from the ordinary chocolate-coated compressed tablet of any reliable manufacturer. I think, however, that we usually have to give from six to nine of the five grain tablets daily and continue treatment for many weeks in order to get the best results.

In the secondary anemias the results gained with iron are not so brilliant. In those following prolonged fevers and chronic suppurations or accompanying the progress of malignant growths and Bright's disease the persistent use of iron is of undoubted value. It is also many times useful in the toxic anemias of syphilis, malaria and some of the metallic poisons. Even in some cases of progressive pernicious anemia iron seems to help. Secondary anemias of slight grade due to defective nutrition are frequently encountered: nearly all of these together with such of their accompaniments as headaches, amenorrheas, menorrhagias and neuralgias yield to iron as an adjunct to improved hygiene and nutrition. In all secondary anemias, in which enlarged lymph glands still bear evidence of the primary infection, the salt of preference is the ferrous iodid in the form of the official syrup.

In phosphorus we find a tonic which in minute doses probably stimulates the nutrition of those tissues into the composition of which it enters. It obviously improves those conditions of nervous exhaustion where no organic change has taken place. Thus, it is chiefly useful in neurasthenia, in impotence due to sexual excesses and in certain forms of neuralgia. It is a drug that is prone to disturb the stomach and should be instituted with a small initial dose. Freshly made preparations only should be used, the best of which are a well protected pill and the solution in elixir.

Phosphide of zinc apparently acts in much the same way as does phosphorus.

Phosphoric acid, the phosphates, the glycerophosphates and the hypophosphites are possessed of weak tonic properties. They more properly belong, however, to our second group which we are about to discuss, namely, those which favor nutrition by stimulating glandular activity. It includes such classes as the inorganic acids and the bitter and aromatic vegetable drugs. Of the inorganic acids hydrochloric is the one most extensively used. It is of undoubted value in certain forms of indigestion usually characterized by a deficient amount of this acid in the gastric juice.

A study of the many-sided uses of hydrochloric acid in the gastric juice is aside from the scope of this paper, but it is pertinent to remark that they all, more or less directly, tend to the same ultimate results, namely, the improvement of nutrition. This acid, in common with the other members of its group, is best administered in the form of the strong acid, well diluted in water at the time of taking.

Nitric and nitrohydrochloric acids still retain the reputation of relieving chronic hepatic congestion by stimulating the secretory glands of the liver and intestine. They are also of value in oxaluric conditions accompanied by mental and physical depression. This condition occurring in a sensitive subject sometimes simulates renal calculus, and from the results obtained may give rise to a false impression of the value of these acids as solvents for stone. By reason of the tendency to deterioration on the part of the nitrohydrochloric acid it is well to use a recent admixture and dilute it with water when about to administer.

Sulphuric acid with its dilute acid and the aromatic dilution while today comparatively little used are nevertheless of value in the treatment of the serous diarrheas of infants and adults, although this action partakes rather more of that of an astringent than a tonic.

The vegetable tonics comprise a group so large as to prohibit individual discussion. As suggestive examples I mention the following five, gentian, hydrastis, cinchona, cascara and eucalyptus. Each of these represents a class by itself, yet they have in common the power of stimulating glandular secretion. Members from these classes may be advantageously selected in treating many states of convalescence characterized by lack of appetite and impoverished digestion when not accompanied by any gastrointestinal inflammation. Also in many slight departures from normal health carrying the above mentioned symptoms with the oft-heard complaint of general lassitude the administration of these simple remedies will promptly restore the patient to his normal state of feeling. At times the indication for the addition of an aromatic or a laxative element to the simple bitter will dictate the selection of the individual drug.

The third division of the tonics, namely those increasing the general tone of the nervomuscular apparatus, including the heart muscle itself, is nicely exemplified in nux vomica, an agent which in small doses acts much like the simple bitters, but in larger doses through its influence upon the cord centers exerts more far reaching and pronounced tonic effects. It is useful in all atonic conditions of the musculature of the stomach, bowel and bladder while at the same time stimulating glandular activity in the gastrointestinal tract. While the ability of this drug to improve respiratory tone and brace up failing respiration in bronchitis, pneumonia and emphysema is due to other than simple tonic influence, yet its more general effects are those of a tonic.

My reluctance to lose sight of the tonic effects of arsenic is responsible for the creation of the fourth division of the tonics. The beneficent effect of this drug in some of the grave secondary anemias stamps it as having a decided power in some way to improve the quality of the blood. Its influence upon certain cases of malaria in which the administration of cinchona has not been satisfactory has suggested that here again it may exert a similar power. In chorea the value of arsenic has long been recognized. With the disappearance of the nervous symptoms a general improvement of nutrition is usually observed. Just how this is accomplished is at present unknown. A more definite knowledge as to the causation of the disease—whether neurotic or infectious —may disclose its mode of action. In these applications of the drug it may be given either in the form of the salts or their solutions. Those most in use are the official arsenic trioxid and the so-called Fowler's solution (liquor potassii arsenitis). This latter lends itself readily to the preferred manner of giving by ascending dosage until the appearance of the early physiological symptoms of slight edema and gastro-intestinal irritation. Purely in view of the known results from arsenic I think that we are justified in designating it a tonic.

8108 Hough Ave.

Ankylostomiasis.

By M. COPLAN, M. D., Cleveland.

Ankylostomiasis—synonyms: uncinariasis, hookworm disease, brickmakers' anemia, Egyptian chlorosis, dirt eating, miners' anemia, miners' cachexia, negro consumption, tropical chlorosis, tunnel anemia, tunnel disease, dochmiasis and mountain anemia—was definitely discovered by Dubini at Milan in 1838. Ralliet, in 1858, described *Uncinaria duodenalis*. Early in the latter half of the nineteenth century, it was observed, described and studied in many parts of the tropics and subtropic world, and in a very limited way in Europe. Pozzolo, Ciniselli Deliot de Sarrignac and Grassi reported cases of ankylostomiasis between 1871 and 1879, Hescle, of Vienna, and White, in the United States, reported cases in 1876.

Until recent years considered a tropical disease of some rarity, it is now known to be widely distributed, not only throughout the tropics, in some countries of which it affects almost entire populations, but throughout the temperate zones as well. Some of the countries in which it has been studied and observed are Egypt, Brazil, the West Indies, Japan, the British Isles, Mexico, Italy and Southern Europe, as well as a few of the Northern European States, Australia, the East Indies, India,

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Ceylon and the Philippine Islands. American interest in the disease practically dates back to the time of the occupation of Porto Rico and Cuba, especially the former. In 1899 Assistant B. K. Ashford of the United States Army first reported the endemic prevalence of ankylostomiasis in Porto Rico and appropriately enough, in recognition of his work in Porto Rico under the military regime, and particularly of his realization of its widespread prevalence, amounting to a national cause, his services were then sought by the Government of Porto Rico and he was named to head a commission for the study and treatment of anemia in that island. This committee found conditions in the valleys, mountains and coast alike, a ghastly population dragging out a miserable existence, and with a death rate which has shocked all who have occasion to learn it. About the time this commission was appointed, Charles W. Stiles of the Bureau of Animal Industry in Washington, D. C., published a paper reporting 25 cases of ankylostomiasis in the United States and pointed out the slight difference between the parasite in it and *Ankylostoma duodenale*. Assistant Surgeon R. P. Strong of the army board investigating tropical diseases in the Philippines, submitted an excellent resumé of ankylostomiasis as observed in these islands. His description is that of *Ankylostoma duodenale*. The reported cases since then are about 1000 domestic and 100 imported ones. These constitute by no means all nor even a part of them in the United States. In the southeastern group of States, notably Georgia, Alabama and North Carolina, and the district long known as the "poor white belt," the residents, who are chiefly American born, have for years been adjudged shiftless, lazy, and inferior. The astonishing discovery has been made that thousands of the poor whites are the victims of ankylostomiasis, as were doubtless their progenitors, and that the unlovely characteristics and low grade of mentality of these poor people are due to *Ankylostoma duodenale*.

During the Spanish-American war a leading medical journal said editorially:

> "If the Spanish-American war brought no other benefits than those of saving the lives and suffering from yellow fever in Cuba and from ankylostomiasis in Porto Rico, it would have been well worth the cost of the men and the money it occasioned. In Porto Rico, the characteristic anemia, which at least for a century has been sapping the life and energy of the people has been studied as never before; its true cause, ankylostomiasis, recognized and the proper treatment for it evolved, so

that there is now a prospect that before many years have passed, this evil will be eradicated."

George Blumer in his oration on medicine before the American Medical Association in 1905, stated that Missouri, Tennessee, Florida, Louisiana, Texas, Mississippi and some parts of Illinois, Indiana and Ohio are probably affected. James B. McElroy in his oration on medicine at the sixtieth session of the American Medical Association said that through the researches of the United States Health and Marine Hospital Service, of the Porto Rico Commission, as well of practitioners in the endemic area, we have learned of the great economic importance of the hookworm disease. According to the report of Surgeon General Wyman, the recent researches of Stiles have shown that 12.6% of the employees of cotton mills of the South are affected; that of this class, 13 to 18% of those women of maternity age are in a condition which prevents them from properly nourishing their babies; 5.8 to 20% of the males of possible military age are in a condition, which would materially decrease their military efficiency; 48.1% of the children suffer from anemia, producing disease which would naturally inhibit their usual capacity for study. These figures serve to emphasize the truth of the statement of Allen J. Smith, who writing on this subject in 1904 said:

> "All through the district of our Southern States, infected by the American hookworm, there exists a class of persons notorious for their unprogressiveness, lack of ambition, application and effort, their sallow, unhealthy look, cadaveric appearance, and uniform poverty in the midst of natural fertility and plenty. . . . . These families are usually prolific, but with parents of the type mentioned, probably many in childhood die from the direct and indirect effects of uncinariasis. Of those who live, a large proportion suffering from the same parasites grow up stunted in mind and incapable of physical effort, without incentive, hopeless, unequal to real exertion, branded as lazy and wearing the mark without care or shame. Their pallid, spindle-legged, pot-bellied, and always dirty and unkempt children grown to manhood and womanhood may scarcely hope to breed a stronger race than themselves; and thus, generation after generation from originally strong and virile progenitors, families recede and eventually die out."

Quite recently some very important observations have been made in Manila upon the indirect effect of hookworm infection. When the Americans took charge of Bilibid Prison, the death rate was 238 per 1000 per year; by improving the sanitary condition, this death rate was reduced to about 75 per 1000; here it remained stationary until it was discovered that a very high percentage of the prisoners were infected with ankylostomiasis and other intestinal parasites; then a systematic campaign was inaugurated to expel these worms, and when this was done, the death rate fell to 13.5 per 1000.

Although the death rate among our American negroes has not as yet been reduced in a similar way, it cannot be doubted that a reduction of their hookworm infection would result in a reduction of their general death rate, which, when compared with the death rate of the whites, is in a ratio of 29.6 to 17.3 per 1000 per year for the registration area.

About 90% of the rural population of Porto Rico are infected; likewise many observers in Southern Florida estimate that 90% of the rural population of that district harbor the parasite to a greater or lesser degree.

In Germany cases have been repeatedly detected, especially among brickmakers in the Rhineland and elsewhere, among those who work in wet clay pits. In some German mines 30 to 80% of the miners have been found infected. So far as known, the infection is rare in American miners.

Chamberlain, after a careful study of the disease, says that infection with uncinaria is very common among southern bred soldiers during the first three years of service. In 100 men examined, 60% showed uncinariasis. Among new recruits the infection is at times as high as 85%.

Komori reports a case of retinitis from ankylostomiasis. Mitsums reports a case of brain disease following ankylostomiasis of the lungs.

Etiology: Ankylostomiasis is caused by the presence in the human intestine of a peculiar nematoid worm; it equally affects males and females, regardless of race and color. While more common in early life, between three and forty, it may occur at any age. Ashford, King and Gutierrz found more cases between five and nine than in any other five year period.

The negro does not suffer so much from the infection as the white man; in other words he presents a relative immunity to the direct effects of the hookworm. This observation carries with it a very important thought, that the negro had this disease for so many generations in Africa that he has become somewhat accustomed to it. It is also possible that he brought this disease from Africa and because of his soil pollution has spread it broadcast throughout the South, killing thousands and causing serious diseases among tens of thousands of others.

Source of Infection: It has been demonstrated by Loos that the hookworm larvae may pass through the skin, reach the circulatory system, pass with the blood through the heart to the lungs, from the lungs to the air passages, up to the larynx, down the esophagus to the stomach and then to the small intestine. Loos made his discovery accidentally in 1894, by noting the irritation caused by a drop of water containing about one thousand embryos which fell upon his hand; the embryos disappeared through the skin, leaving the tiny shells behind them, and ankylostomiasis subsequently developed in himself. He then experimented on animals and men and established the truth of his observation. His theory of skin infection first met with opposition and incredulity, but it is now accepted by all helminthologists, even those who at first directly opposed it. In North Carolina and elsewhere in the United States, ground-itch, which is probably the skin lesion caused by concentrated earth cultures of ankylostoma embryos goes hand in hand with ankylostomiasis. The eggs are oviposited in the intestine of the patient. They do not develop until after they escape with the feces; then they develop within 24 hours or more, according to the conditions of heat, moisture and amount of oxygen, a rhabditiform embryo which undergoes ecdysis (shedding of the skin) after about 48 to 72 hours, a second ecdysis which occurs after five or nine days changes the worm to the infecting stage, the so-called encysted larvae; from this point the worm takes no food until it reaches man.

Infection takes place in two different ways, through the mouth, either with contaminated food or water; or from earth, containing the hookworm larvae, adhering to the hand. This second method of infection is doubtless the more common. The young hookworms in boring through the skin produce an attack of "ground-itch" (also known as "foot-itch," "foot-sore," "dew-itch," "dew poison"). Thus ground-itch is usually the first stage of hookworm disease.

There are at least two recognized forms of hookworm which infect men, namely, the Old-World hookworm, *Ankylostoma duodenale* and the New-World hookworm, the American hookworm, *Necator americanus,* (Stiles 1902) or *Uncinaria americana.* Both parasites inhabit the small intestine, especially the jejunum and ileum and occasionally the duodenum and the stomach. *Uncinaria americana* (Stiles 1902) is the common hookworm of the American continent and adjacent islands and has also been found in Italy, Spain, China, Africa and Germany. The Old World hookworm or *Ankylostoma duodenale* (Dubini in 1843) is found in Europe, Asia, Africa and Australia. The American hookworm is 7-11 mm. long and possesses a dorsal and a ventral pair of lips at the mouth, a prominent dorsomedian buccal tooth and four buccal lancets. In the male, the dorsal ray of the bursa divides at the base and each branch possesses two tips. In the female, the vulva is in the anterior half of the body. The Old World hookworm measures 8-18 mm. and possesses in its mouth two pairs of curved ventral teeth and one pair of dorsal teeth. In the male, the dorsal ray of the bursa is divided at a point two-thirds of its length from the base and each branch is subdivided into three tips. In the female, the vulva is in the caudal end of the body. The American worm is therefore shorter than the long-known *Ankylostoma duodenale;* otherwise they differ very little from each other. There is also a slight difference in the eggs, the ova of *Uncinaria americana* being slightly larger than those of *Ankylostoma duodenale.*

Symptoms: Cases may be divided into light, medium and severe infections. The light infections, in which there are but a few worms in the intestine, do not exhibit any marked symptoms to attract special attention, but a microscopic examination of the feces will show the eggs. The medium cases, in which are found from 100 to 300 parasites, show definite anemia, but not the typical symptoms of ankylostomiasis. The severe cases are those with between 300 and 1000 or more parasites. There is intense anemia, pallor and dryness of the skin, and many evidences of innutrition and oxygen starvation. The pulse is weak, soft and compressible, but not rapid, except upon exertion when palpitation and dyspnea occur. Tinnitus and vertigo, sleeplessness, swelling of the ankles and feet, ascites and general anasarca may occur. There may be a ravenous appetite or complete anorexia and there is a marked tendency to the development of an abnormal desire for sour articles, as lemons and pickles, or for mud, clay, rotten wood and cloth garments (Stiles saw a boy who had eaten up three coats, thread by thread, in one year), and even for mice and young rats. Other symptoms are nausea, vomiting, pain and tenderness in the epigastrium or upon pressure in the right hypochondrium, and bloody stools. Leichtenstern, who made numerous observations upon the brickmakers of Cologne, states that no symptoms are observed for the first three or four weeks after infection, but when the parasites become sexually mature and breed, bloody stools, diarrhea and an accompanying progressive anemia appear, with later a great diminution or cessation of the bloody stools. These are some of the chief symptoms but as they are not absolute ones and since the pathologic changes will cause associated symptoms, it is beyond the scope of this paper to mention all of them.

Diagnosis: This, from purely objective symptoms (exclusive of finding the ova in the stools), is not always possible, even in regions where the disease is known to be prevalent. A positive diagnosis may be made in either of two ways: first, examine the feces microscopically for the eggs, or second, give an anthelmintic and examine the stools for the adult parasites. Stiles' blotting paper test and Bass' test-tube test are of some diagnostic value, but the first two are the best. An eosinophile count of over five percent is strong evidence of infection, but one below this is no proof against it. Leukocytosis is not seen but in chronic cases of long standing leukopenia is often found; the majority of cases show 5,000 to 10,000 leukocytes. Hemoglobin falls before the red cell count; in some cases as low as nine percent has been reported. In a series of about 600 cases Ashford, King and Gutierrz found the average in males about 41%, and in females 49%. The red cells vary from 754,000 to normal, and as the disease progresses, the cells become polychromatophilic and show poikilocytosis. In very chronic cases the eosinophilia is very slight or absent. During treatment, the red cell count and hemoglobin increase rapidly; a weekly gain of 20 to 30% is not rare. A rise in eosinophiles is of good prognostic import.

Treatment: Keep the patient on a milk or light diet for two days. The evening before the anthelmintic is given, one ounce of magnesium sulphate is administered, then an enema, and the next morning at 8 a. m., 30 grs. of thymol in capsules. Two hours later the same dose is repeated, and at 12 m. another ounce of magnesium sulphate is given, after which no food should be taken all day. The following day a milk diet is allowed.

While male-fern, beta-naphthol, eucalyptus oil and chloroform have been used with some success, thymol is much more effective and is superior to any of those, as shown by the experience of the Porto Rican Commission after administering over 12,000 doses, and of Stiles, Sandwich and others.

The dose should be modified according to the age and condition of the patient. Children under 5 years, 30 grs.; between 5 and 10 years, 30 grs.; between 10 and 15 years, 45 grs.; between 15 and 20 years, 60 grs. In old age and in certain conditions of great debility, pregnancy, cardiac and other organic diseases, a tendency to vomit, anasarca, chronic diarrhea, and dysentery are unfavorable to the administration of thymol. This medication is carried on for one day per week until the patient is cured. When repeated examinations of the feces are made and the ova not found, the patient is cured.

Prevention: Keeping the hands clean, wearing shoes, and boiling all drinking waters, will of course, diminish and prevent the disease to a certain extent. But the only line of prevention, which, if carried out, will blot the hookworm disease out of existence is the proper disposal of the feces of those suffering from the disease by the construction and maintenance of suitable privies and the adoption of the pail system in mines, and by insisting upon these being used by every one. If the above preventive measures would be strictly followed out, the hookworm disease would soon be almost a thing of the past, and would be classed among the unusual and infrequent human ailments.

3317 Lorain Ave.

The Traumatic Neuroses from the Legal Point of View.

By GLEN A. BOONE, LL. B., Cleveland.

The undisputed position the so-called neuroses have attained in our medicolegal controversies requires more than a hasty or superficial investigation by the legal profession in order that we may determine to what extent they should be recognized in the adjustment and litigating of claims growing out of traumatism when the claimant or plaintiff presents unmistakable symptoms of these psychic and nervous phenomena.

About 10 years ago Dr Pearce Bailey, in presenting his views on the subject, said that since the appearance in 1866 of Erichsen's book on Concussion of the Spine, in which was published the sums of money paid by corporations for spinal injuries, the number of suits and amounts involved, had steadily increased;

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and I venture to say that in the last 10 years the increase in claims and litigation arising from alleged nervous disorders of one type or another, far exceeds those made from Erichsen's time to the date of Dr Bailey's observation.

In a report issued in September, 1909, by the Bureau of Railway News and Statistics, it was stated that the payments made by the railways of the United States on account of injuries to persons, increased 254% between 1897 and 1907. This healthy growth of what is sometimes termed "the damage and injury industry" is sufficient justification for bringing together the medical and legal professions as in this Section, in order that a clearer understanding may be had of one of the principal sources of damage claims.

While my attention has been called to the number of cases of neurasthenia and hysteria in which there was no hope of gain, my observations have been confined chiefly to cases in which compensation was sought for injuries received, or alleged to have been received, and the following case was one of the first in this city arousing any considerable interest in the subject under discussion.

About 13 years ago L. N., a German saloonkeeper about 35 years old, was a passenger on a street car and was standing on the front platform of the trailer. It was raining at the time, and his shoes and clothes were somewhat damp. It was alleged that owing to defective wiring there was a leakage of current and that the platform, or some part of it, was charged and that the upper portion of the claimant's body coming in contact with some metal part of the car formed a circuit and he received an electrical shock through the soles of his shoes. The voltage being used at the time of the alleged injury was between 300 and 400. Claimant went home alone and within a short time called a doctor. Examination disclosed no objective signs of injury. He complained of numbness and inability to walk unsupported; traumatic neurasthenia was claimed, and through the attending physician, attorneys were speedily engaged and suit filed. Prominent neurologists, representing both plaintiff and defendant, made a careful examination of the plaintiff. Those called by him claimed organic lesion and permanent disability. The physicians called by the defendant reported that all symptoms were subjective and that they were unable to find any evidence of organic disease or pathological change. He was kept under observation for nearly a year, and during that time was never seen to walk without the aid of crutches or support of some kind. The case was settled before trial. About 60 days afterward I had occasion to call on plaintiff, and on going to his home I found that he had given up his business, and had moved into the country where he had purchased a small farm and was doing all necessary work in preparing for spring planting.

In passing, I wish to call attention to the fact that at that time, and I am not sure but up to the present time, the consensus of medical opinion is that electric currents which do not produce almost immediate death, do not cause organic nervous disease.

The next case of psychic disturbance was that of a young woman, 18 or 19 years of age, employed in one of the factories of this city. She was a passenger in a car that collided with another, and she was thrown forward in her seat, being slightly shaken and considerably frightened. An examination made within a few hours after the accident disclosed no objective signs of injury. Shortly after the accident, and during negotiations for settlement, she was attacked with involuntary vomiting. There was no settlement and suit for damages was commenced. During the two or three years awaiting trial, she was under the care of a competent and reliable physician, but she failed to respond to his treatment. During the entire trial, lasting several days, she frequently vomited, and while testifying had five or six attacks. The physician called as her expert testified that her condition was permanent and progressive. The doctors called by the defense testified that her condition was purely psychic and that as soon as her lawsuit and the attending anxiety was ended, her condition would improve. She was given a verdict which was paid. About a year later I met plaintiff and her mother on the street, and upon inquiring as to her health, was told that it was good and that the vomiting spells had ceased, that she was happily married and the mother of a fine baby.

The next case was that of a young lady about 20 years old employed as a millinery saleswoman. While passing behind a street car she was struck a glancing blow on the head by a falling trolley pole. She was momentarily stunned and was taken home in a carriage. An examination made a few hours after the accident showed a contusion of the head with a slight extravasation about the size of a small hen's egg which was absorbed within a week. She was nervous, but was not at any time confined to her bed. She was of the type extremely susceptible to suggestion and, unfortunately, she fell into the hands of the physician who had charge of the first case mentioned. He gave her electrical treatments daily for her "terrible nervous condition," and through him the same attorneys were engaged and suit was almost immediately filed. She came into court nearly three years later a functional nervous wreck caused by suggestion. During the direct examination she was on the verge of a collapse three or four times, and it looked as though it would be impossible to cross-examine her; but she was taken in hand by a past master in the art of cross-examining those afflicted with nervous and psychic disturbances, as well as others, and after more than an hour's searching examination she left the witness stand composed and in a state of almost complete tranquility. The proximate cause of her condition developed when the attending physician testified that although no operations were performed, his bill for electrical treatments, amounted to $2240.00. The jury evidently disregarding his evidence and bill, gave her a verdict of $1,250.00, which was paid, and she immediately resumed her vocation fully recovered from her "terrible nervous condition."

It is generally conceded by the investigators of the phenomena under discussion, that there is great difference in the susceptibility of the races with referenc to shock, and that the negro suffers especially from superstition, fear, shock, and suggestion. The unfortunate case to which I now draw your attention, is that of a young colored woman about 26 years old, employed as a domestic and of average intelligence.

In July, 1902, she was a passenger on a street car and while in the act of alighting the car she was on was struck by one from behind. The collision was so slight that neither car was damaged, not even the glass in the windows was broken; no claim of injury was made by her, or by any of the passengers at the time of the accident, and her name, with others, was taken, as a witness of the occurrence. She went to the home of her employer and the next day did a large washing, and in the evening went to visit friends. A day or two later, on the advice of friends, she consulted a physician, giving him the history of the accident and telling him that her head had bumped against one of the posts at the end of the seat, and that she was suffering from pain in the head. Upon an examination a small drop of dried blood was found in the canal of the outer ear, but as there was no evidence of injury to the ear-drum, canal or surrounding parts, no significance was attached to this by the physician, "although he mentioned it to her." There were no other evidences of injury to be found. She complained several times to the physician about the pain in her head, and he innocently said to her, "Well, Lena, a pain like that is enough to make a person crazy." The subjective symptoms increased, and a few days later she was taken to a hospital and almost immediately went into a cataleptic state; all efforts to make her hear or attract her attention were unavailing until suggestion was tried by one of the doctors called to see her, when she responded to every request made by him in a normal tone of voice. She remained in this condition some days, then a surgeon was called to examine her, and it was decided to operate by drilling into the mastoid cells to relieve, if possible, her deafness. The cells were found to be in a normal condition, and trephining over the speech center followed, to relieve the aphonic condition. No lesion, clot or evidence of pressure was found, but the patient commenced to talk and answered questions put to her in an ordinary tone of voice shortly after recovering from the effects of the anesthetic. In a short time deafness apparently returned and she assumed a bending posture with the right shoulder held higher than the left. Suit was brought, the petition alleging traumatic hysteria. In investigating her condition prior to the accident, for possible preexisting causes, we learned that at times, when reprimanded by her mistress for inattention or carelessness in her work, she would fly into an hysterical fit and throw kettles and pans around the kitchen during her paroxysms, and also, that her history indicated a specific condition. She was able to testify at the first trial, and claimed that she had been unable to hear ordinary conversation or stand upright since the operations and she pretended not to hear the attorney for the defense unless he shouted in a loud voice. It was demonstrated, however, in the presence of the jury that she was able to hear the slightest sound made by the Galton whistle. Some 17 or 18 physicians and experts testified at the first trial, which lasted 15 days, fully covering the subjects of hysterical dumbness, psychic shock, traumatic deafness, aphonia, muscular atrophy, enlargement of the inguinal and epitrochlear glands, general increase in the reflexes, functional ankle-clonus, mastoiditis, trephining, nystagmus and hippus, exaggeration of the knee-, wrist- and jaw-jerk, curvature of the spine, the Romberg symptom, Mankopf test, Babinski sign, complete anesthesia, syphilis, suggestive therapeutics, traumatic hysteria, both major and minor,—and the jury disagreed.

During the first trial it developed that after the operations referred to, she had visited in Canada and on investigating it was found that while there she walked in an upright posture and that her hearing was normal. This was testified to at the second trial by one of Canada's most prominent surgeons and his assistant. Before the second trial which lasted 14 days and resulted in a verdict for the defendant, the plaintiff developed a condition of transitory mania, and was taken to the State Hospital where she is still confined in a condition of dementia praecox. Her hearing is normal, and she walks in an upright posture. She is peaceful, is able to do some work, but is controlled by marked delusions.

This case, which was tried six years ago, necessarily furnished a broad field for difference in opinion of the medical gentlemen who were called into the controversy, and in a great many respects they were diametrically opposed to each other. It is this great variance, especially in the past, which perhaps was necessary to stimulate the careful and painstaking investigation this illusive subject has received in the last few years, that has at times caused, if not justified, the members of the legal profession to look with righteous suspicion upon some of the delineations of traumatic neurasthenia and hysteria.

My observations covering nearly 17 years, have been in connection with the claim and legal departments of liability insurance companies, street and steam railroads, and in the cases in which traumatic nervous disorders furnished the basis of claims, I would estimate that at least 95% of the claimants fully recovered within a reasonable time after their claims have been disposed of. Had I the time I could give you the history of many other cases covering nearly every symptom of the disease, including simulation and malingering as a fine art; but the field of observation is so wide that one is confronted with an almost impossible task in endeavoring to fairly discuss the subject in a limited paper.

We find that during the early days of investigation, hysteria was supposed to occur exclusively in the female, and that since that time, especially during the last 50 or 60 years, there has been great contention among the doctors as to the extent the symptoms of traumatic neurasthenia and hysteria should be recognized in the diagnosis of cases in which there was definite or claimed injury. I am sure that I am voicing the sentiment of a great majority of the legal profession in hailing with gladness the signs pointing to the getting together of our medical brothers in their efforts to eliminate the intangible, and agree upon the real factors controlling this phenomenon, and I trust that the day is near when examinations of those seeking redress for injuries received, will be conducted by the physicians called, in the same spirit as in ordinary professional consultations, pointing out to each other symptoms possibly overlooked in order that the truth may be ascertained.

The desire today of the railroad companies and other corporations who must necessarily bear the financial burdens growing out of accident and injury to their employes and the public, is to know the truth, and they do not seek to shift the burden of their responsibility when it is shown that the claim is meritorious.

933 Society for Savings Bldg.

Report of a Case of Ovarian Cyst Weighing Sixty-two Pounds Removed from a Patient Aged Eighty—Recovery.

By EDMUND CONE BRUSH, A. M., M. D., Zanesville, O.

Mrs. G., aged 80 years, white. Family and personal history excellent. This patient had noticed that her abdomen had been increasing in fullness for over 25 years. It gradually but slowly kept on growing although there appeared to be periods of rest. For the past two years the growth had been steady and more rapid than in any two years of its history. When the patient was sitting this enormous growth filled her lap to the knee caps.

Mrs. G. was oversensitive regarding her affliction and never spoke of it, nor did she allow others to talk to her about it. In the late fall of 1909, Mrs. G. sent for me and unburdened her mind. She realized the possibility, or rather the probability, that she might become a charge or burden to her friends. Always very active and energetic, she found that she was getting more and more cumbersome. The fear of falling and becoming disabled was often present. My diagnosis was an ovarian cyst and I advised her to have it removed. There was nothing the matter with her but this tumor and she had always appeared and acted much younger than her years indicated.

She decided upon an operation but put it off until after the holidays, as she had planned some Christmas work and shopping.

On January 5, 1910, Mrs. G. was admitted to the Good Samaritan Hospital and prepared for the operation to be performed the next morning. After a fair night's rest she went to the operating room in good shape, at 9:30 a. m. One-half hour before this she was given a hypodermic of one-fourth grain of morphin and one-hundredth grain of scopolamin. The anesthesia was prompt, quiet, uneventful and in charge of Dr J. R. McDowell.

The usual incision was made in the median line and drainage begun. On lifting the empty cyst out of the abdomen there was no well defined pedicle but the sac involved both broad ligaments alike; thus making a very broad base and as the sac was quite thick, it made the parts to be ligated unusually bulky. Ligation could not be done en masse, so four separate ties were made. These four stumps were cauterized with carbolic acid and washed off with alcohol. The external layers of the sac were picked up and sewed over the cauterized stumps so as to bury them. The abdominal incision was closed by continuous catgut sutures through the peritoneum and a second row through the abdominal wall. The patient was taken to her room at 11 a. m., in good condition and made an uneventful recovery. The only medication given was an occasional laxative. The catheter was not needed. The sac weighed three pounds and its contents 59 pounds.

Mrs. G. was discharged from the hospital on the twenty-fourth day.

Doctors Chas. H. Higgins and Edmund R. Brush assisted.

Micropthalmus, Report of Case and Exhibition of Specimen.

By EDWIN G. RUST, M. D., Cleveland.

The term microphthalmus is derived from two Greek words, meaning small, and eye. Gould gives this definition of microphthalmus, "an abnormally small but otherwise healthy eye." De Schweinitz in defining the condition says: "Microphthalmus is that condition in which the entire eye remains in a more or less rudimentary state, and in which the cornea is too small in all its diameters." This seems to be by far the most comprehensive definition, and includes within its scope the various forms of this rare anomaly.

Numerous theories exist in regard to the etiology: as "retarded growth of the cerebellum" (Kundrat); "incomplete closure of the foetal ocular cleft" (Arlt); "foetal illness in orbita" (Wedl and Boch); "intra-uterine sclero-chorio-retinitis" (Deutschmann). William Lang and E. Treacher Collins have divided microphthalmic eyes into two classes, placing in the first class, "those in which there is no apparent congenital defect except the smallness of the globe." Belonging to the second class are "those

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in which in addition to the eye being unusually small, there is some other abnormality, resulting from imperfect closure of the foetal fissure."

To a slight degree highly hypermetropic eyes belong to the first class. Sometimes when the central artery of the vitreous remains persistent, and patent, as described by Norris and Oliver under the heading of Anomalies of the Vitreous, "the eyeball does not develop to its normal size, although there has been a perfect union of the foetal ocular cleft." Such an eye is strictly in the division designated as the "first class." Mr. Lang and Mr. Collins treat the second class under two heads viz: "Those where the defect in the closure of the ocular fissure is slight, and in which the eyeball retains nearly its normal shape, and those where the abnormality is very gross, the eye being usually exceedingly small, while connecting with it are one or more cysts. The cysts are often of considerable size and are situated in the lower part of the orbit or lower lid. They are thin walled and often semi-translucent. Again they are very large filling the whole orbit. On dissecting these cysts it will be found that they are not separately formed cysts, but are connected by a small neck at the lower portion of a rudimentary ill developed eyeball. The outer wall of the cyst is the sclerotic, and the inner of more or less highly developed choroid and retinal tissue: both the outer and inner wall being continuous with those of the microphthalmic eyeball, of which the cyst or cysts form a part."

Jackson decribes these cysts as congenital cysts that are "always associated with the extreme microphthalmus or anophthalmus, and developed from what should have formed the interior structure of the eye."

In speaking of microphthalmus Fuchs says: "Sometimes eyeballs are found which are only as large as a pea or a millet seed, and which lie entirely in the back of the orbit and are not discovered in an examination made upon the living subject. In this way absence of the eye (anophthalmus) is simulated." He also infers that "most likely every case of supposed anophthalmus is one of extreme microphthalmus," stating that whether a condition in which "while the orbit is present, there is not even a rudiment of the eyeball—does occur or not, has not so far been determined." Arlt explains microphthalmic cases as being "due to incomplete closure of the ocular cleft, the tissue closing in the cleft, bulging out into quite a large sac, which is appended to the eyeball while the latter itself is retarded in its development." The infrequent occurrence of microphthalmus makes individual observation exceedingly meager.

This compilation of research of the different authorities which I have presented to you embraces practically the best of everything that is so far known in regard to microphthalmus.

My personal experience is limited to one case, the history of which is as follows:

The patient, a young woman aged 26 years, came to me four years ago from Lapeer, Michigan. She was in robust health with symmetrical features, excepting the left eye which was microphthalmic. The orbit and eyelids were counterparts both in size and shape of those of the other side. The eyeball itself had always remained rudimentary. The cornea and pupil were, until two or three years prior to my seeing the case, reported to have had a normal appearance in all respects except size. The patient cannot remember that perception of light was ever present. At the time of my examination, owing to a calcareous degeneration of the cornea and a cataractous lens, I was unable to form any idea of interior conditions. Several oculists had at various times been consulted and, with one exception, the advice of all was to "let the eye alone." The fellow eye was perfect in size and appearance. Both field and tension were normal and the ophthalmoscope showed the fundus to be free from any disease or irregularities. I refracted the eye under a mydriatic finding O. 25D of simple hypermetropic astigmatism with axis 90 vision 20/20. The ocular conjunctiva of the abnormal eye being of sufficient area to cover the sclera of a full sized eyeball, so nearly buried the diminutive eye in its full sized socket, that little more than the cornea was visible. As a child the patient had not been sensitive in regard to the deformity. Her associates had grown up with her and neither she nor they gave thought or notice to the uncanny little eye. Later in life she became always conscious of her strange looking eye. This, coupled with the increasing chalky appearance of the cornea, brought her to me for advice and treatment. On account, first of the progressing calcareous degeneration of the cornea, with the probability of a similar condition existing in the lens and choroid; and second for the cosmetic effect I advised and performed an enucleation of the eye, and tonight present it to you for your inspection.

This case was one of pure microphthalmus belonging to the second class, under the division of "rudimentary development without cysts." The vertical and horizontal diameters of the cornea measured five mm. and six mm. respectively. The shape was more quadrangular than spheroidal, the flattened spaces corresponding to the insertions of the tendons of the four recti muscles. The patient was soon able to wear a full sized shell, the artificial appearance being reduced to a minimum by reason of the glasses worn to correct the astigmatism of the seeing eye.

316 Lennox Bldg.

Mercurial Treatment of Pulmonary Tuberculosis.

By JOSEPH PLACAK, M. D., Cleveland

In reviewing the literature upon this subject it is found that mercury was advocated in the treatment of tuberculosis several decades ago by Baumes and Ramazinni and more recently by Havilland, Hall and others. Since that time it has been abandoned until reintroduced by Barton Lisle Wright of the United States Navy, who recently advocated the deep intramuscular injections of mercurial preparations as a specific in the treatment of pulmonary tuberculosis.

During my service as resident physician at the Municipal Sanatorium, I tried his methods on a number of cases which were in different stages of the disease, mostly in the secondary stage. The method and the dosage which he advised were followed as nearly as possible. The majority of the cases which received mercury, either by intramuscular injections or by mouth, were not as far advanced as those reported by Wright; and were such as one would expect to respond very early to a so-called specific remedy.

In selecting the cases for treatment an effort was made to include not only those in the earlier, but also those in the rather far advanced stages of the disease. During the treatment of this series I was fortunate in having three patients who had had syphilis. They all gave a history of having had a chancre, secondary eruption, etc., there being no question in my mind of the presence of syphilis. In fact, in all three cases, I was led to believe that the syphilis was the underlying cause of the tuberculosis, if such a thing be possible.

Administration: A number of cases were treated by administering by mouth the bichlorid of mercury in ascending doses, combined with the compound tincture of gentian. The remainder were given intramuscular injections of the succinimid of mercury into the nates, subscapular and interscapular regions and into the deltoid muscles.

Solutions were prepared by dissolving the succinimid in previously boiled, distilled water, 10 minims or 0.064 c. c. representing 1-5 gr. or 0.013 gms. The syringes and needles were boiled for half an hour and when not in use were kept in 95% alcohol. The area to be injected was scrubbed with soap and

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water, washed with 5% carbolic solution and then with 95% alcohol. After this preparation the needle, which is about two inches in length, is plunged deep into the tissues. Occasionally there is a slight flow of blood. The pain at the time of inserting the needle is practically insignificant, but after the solution from the syringe has penetrated the tissues the pain frequently is very severe; many times my patients begged to be excused from taking the treatment. The pain associated with many of the injections came on in about an hour and frequently persisted for a few days. Of the different sites of injection the buttocks was the least painful, due possibly to diminished nerve supply. The pain following injections into the interscapular and scapular regions was at times quite severe. In an endeavor to lessen the pain, the succinimid was dissolved in varying quantities of water, producing different concentrations, with the idea of determining whether large quantities of the solution by pressure caused the pain. It was found, however, that the amount had no relation to the severity of the pain.

Of the great number of injections given, in two instances only were superficial necroses produced, probably by injecting too close to the surface where absorption does not take place as rapidly as it does in the deeper tissues. In several of my cases hard, round indurations could be felt at the site of the injection which persisted several months after treatment with no evidence of their diminishing in size.

Action of Mercury: As regards the action of mercurial salts in tuberculosis I quote from a review by Sajous as follows: "The effects of the large or frequently repeated doses are familiar to everyone, and under such doses the proteolytic or digestive properties of the blood become so intense that the blood cells and tissues even are broken down and a new source (of consumption) is added to the tuberculous process."

Sajous' investigations in this connection suggest: (1). That small doses of mercury are beneficial in the treatment of tuberculosis because they enhance to a marked degree the production of bacteriolytic and antitoxic substances in the blood, and thus insure the destruction of the tubercle bacilli and other endotoxins. (2). That full or large doses of mercury are harmful in this disease because they provoke an excessive formation of those substances and cause hemolysis and even cellular autolysis when sufficient quantities to induce mercurialization are administered. In the cases reported below my experience has been that large doses of mercurial salts lead to a breaking down of the tuberculous area causing a marked activation of the disease. On the other hand, small doses seemed to act as a general tonic. So also is the case when potassium iodid is administered as part of the treatment in tuberculosis by Wright. Moderate or large doses of the iodid cause frequently a marked activation of the tuberculous process similar to that caused by an overdose of tuberculin.

Results: The good results obtained in the three known syphilitics led me to believe that mercury succinimid produced its best results in those cases in which syphilis seemed to be the underlying cause of the tuberculosis. My experience with the succinimid of mercury has been limited to about 20 cases, yet this number has been sufficient to convince me that mercury will fall by the wayside as many so-called specifics in tuberculosis have done in times gone by.

The argument might arise that the treatment was not continued long enough to form any absolute conclusions. It is my belief that two and three months' treatment in many of the cases was sufficient to produce results if any were to be had. Many of the patients after a length of time claimed they received no benefit and on account of the pain refused to take the injections. Following are the reports of a few cases which received either the intramuscular injections of the succinimid or the bichlorid of mercury by mouth:

Case 1. J. S., aged 26, tinner, entered June 24, 1908. Family history, negative. Personal history, negative. Physical examination, moderately advanced. Tubercle bacilli, 2-3 to field. Weight, normal 166 lbs., on entering 146 lbs. Gained 16 lbs. from time of entering to beginning of treatment, without very marked improvement of lung signs. Treatment: Bichlorid of mercury by mouth increasing from 1-20 gr. to ⅛ gr. three times a day, over a period of seven weeks. Gain during treatment 2 lbs. No lung improvement. No diminution of tubercle bacilli. Treatment discontinued on request of patient. Physiologic limit reached.

Case 2. Nellie M., aged 21, housework, entered Sept. 3, 1907. Family history, father and mother died of tuberculosis. Personal history, negative. Physical examination, moderately advanced on the left side. Weight, normal 145 lbs., on entrance 116 lbs. Bacilli, 3-5 to field. Treatment, started Oct. 9, 1909: Bichlorid administered from 1-20 gr., increased to ⅛ gr. From time of entrance to time of treatment gained 7 lbs. with slight improvement in lungs and general condition. During treatment lost 2 lbs. No change in lung condition. After treatment was discontinued gained 4 lbs., weight remained stationary a couple of weeks, then slight loss, with again a gradual gain.

Case 2. C. O., aged 29, single. Family history, negative. Personal history, negative. Physical examination, moderately advanced. Bacilli, 9-10 to field. Bichlord of mercury by mouth 1-20 gr. for 2 months. Weight remained stationary. No change in lungs.

Case 4. M. B., female aged 20, shop-girl. Family history, tuberculous. Personal history, negative. Physical examination, far advanced. Bacilli, 15-20 to field. Bichlorid of mercury administered 2 months, increased from 1-20 to ⅛ gr. Up to time of treatment gained 6 lbs. During treatment lost 2 lbs. After treatment was discontinued gained 6 lbs. No change in lung condition. Later patient lost rapidly and died.

Case 5. M. D., aged 25, housewife. Family history, negative. Personal history, negative. Physical examination, moderately advanced. Bacilli, 2 to a field. Before treatment gained 24 lbs. under fresh air and feeding. Bichlorid of mercury given by mouth over a period of 2 months, 1-20 gr. increased to ⅛ gr. During treatment lost 4 lbs., no change in lung condition. After treatment was discontinued gained 4 lbs. Remained in sanatorium several weeks, gained rapidly, has had no return of trouble, left sanatorium 18 months ago and is able to do her own housework.

Case 6. R. Y., aged 20, housework. Family history, tuberculous. Personal history, negative. Physical examination, far advanced. Baccili, 20-25 to a field. Bichlorid of mercury by mouth over a period of two months, lost rapidly in weight and strength. Died a couple of weeks after treatment was discontinued.

Case 7. A. P., aged 21, housework. Family history, tuberculous. Personal history, negative. Physical examination, moderately advanced. Bacilli, 5-10 to a field. Bichlorid of mercury was administered by mouth in ascending doses 1-20 to 1-10 gr. for two months. From time of entrance to beginning of treatment, a period of two months, gained 11 lbs. During mercury treatment by mouth lost 10 lbs. Intramuscular injections of the succinimid were then given for one month during which time patient gained 10 lbs., temperature was lowered to normal, lung condition improved, tubercle baccilli remained the same. Patient still has an active tuberculosis one year after treatment.

Case 8. N. S., aged 34, housework. Family history, negative. Personal history, negative. Physical examination, far advanced. Bacilli, 7-10 to a field. Bichlorid of mercury 1-20 to ⅛ gr., with tincture gentian comp. was given three times a day for two months. Bore treatment very well with no signs of intolerance. Mouth treatment was discontinued and intramuscular injections, 1-10 to ⅕ gr. were given twice a week, later three times a week. Patient was able to stand large doses without pain. From a stationary weight patient lost 15 lbs. during treatment. No change in lung condition or number of bacilli. Patient died.

Case 9. M. S., aged 23, widow, housework. Family history, negative. Personal history, gonorrhea, denies syphilis although suspected. Physical examination, moderately far advanced process, reacts to von Pirquet's and subcutaneous tuberculin tests, repeated examinations of sputum were always negative. Bichlorid of mercury was administered by mouth in ascending doses, 1-20 to ⅛ gr., three times a day, for two months. Intramuscular injections were then given three times a week for one month.

Considerable pain was produced after the injection. Superficial area of necrosis was produced which was very resistent to treatment. Patient gained a few pounds, with some lung improvement. Since treatment has become progressively worse.

Case 10. F. G., aged 25, painter, single. Family history, negative. Personal history, negative. Bacilli, 1-2 to a field. Physical examination, moderately advanced. Intramuscular injections for about a .month. Owing to the pain following the injections they were discontinued at the request of the patient. Patient lost rapidly and died a few days after treatment was discontinued.

Case 11. N. R., aged 22, single, housework. Family history, negative. Personal history, negative. Bacilli, 3-5 to a field. Physical examination, moderately advanced. Received nine injections of 1-10 gr. of succinimid. Patient begged that they be discontinued on account of pain. Nodules were produced. Loss of weight. No lung improvement.

Case 12. W. R., aged 18, laborer, single. Family history, tuberculous. Personal history, negative. Bacilli,. 10-15-20 to a field. Physical examination, far advanced. Received number of injections into buttocks, were discontinued on account of pain. Patient died shortly after.

Case 13. S. A., aged 24, single, housework. Family history negative. Personal history, negative. Bacilli, 2-3 to a field. Physical examination, early tuberculosis. Injections of succinimid, 1-10 to 1-5 gr. every other day for 7 weeks. Injections caused considerable pain. During treatment lost 5 lbs. No change in lung condition, or number of bacilli. After treatment was discontinued gained rapidly in weight and lung condition improved considerably.

Case 14. J. B., aged 24, single, laborer. Family history, tuberculous. Personal history, has had soft chancre and gonorrhea. Physical examination, moderately advanced. Bacilli, 1-2 to a field. Injections of succinimid, 1-10 to 1-5 gr. every other day for one month. Gained 3 lbs. during treatment. Slight improvement in lung condition.

Case 15. B. F., aged 33, waitress. Family history, tuberculous. Personal history, has had gonorrhea, chancre (hard), secondary eruption, etc. Physical examination, early tuberculosis. Bacilli, 1-10 to a field. Bichlorid of mercury, 1-20 to 1-8 gr. with tincture gentian comp. was given by mouth for two months. Physiologic limit reached. Stationary weight during treatment. Lungs improved considerably. Occasional tubercle bacillus found in sputum. Patient remains fairly well without active signs of her disease one year after treatment.

Case 16. F. E., aged 29, single, bartender. Family history, tuberculous. Personal history, has had chancre (hard) with secondary eruption, gonorrhea twice. Bacilli, 3-5 to a field. Physical examination, early tuberculosis on left side. Bichlorid of mercury, 1-20 to 1-8 gr., was given with tincture gentian comp. for two months. Succinimid of mercury was given by injection over a period of one month. Injections caused considerable pain. A superficial necrosis was produced which persisted many months after. Gained 9 lbs. during treatment. Tubercle bacilli diminished in sputum. Lungs improved considerably. Remains without active signs of the disease after one year and works every day as bartender.

Case 17. O. S. J., aged 43, saloonkeeper. Family history, tuberculous. Personal history, had chancre 8 years ago followed by eruption, falling of hair, etc., and has had bubo and gonorrhea several times. Also had two large, round, inflamed and painful lumps on forehead which had been present six months. Tubercle bacilli present in sputum. Physical examination shows moderately advanced tuberculosis. Given mercury by mouth and intramuscular injections. Improvement rapid. Lumps on forehead became soft and diminished in size. Has remained well for one year and is working every day as street car conductor.

Of the 17 cases reported above, the three syphilitics showed a marked improvement, one patient in whom syphilis was suspected showed a marked improvement, three non-syphilitic cases showed slight improvement, five cases died, the remainder became progressively worse.

How then can we explain the results which were obtained by Wright? The thought occurred to me that his patients (mostly seafaring men) may have had syphilis. Then again his patients were getting all the benefits of fresh air, feeding and the regular routine of a sanatorium. The results obtained from the general routine are many times marvelous, even in advanced cases and one may become deceived at times, ascribing the improvement to some remedy when in reality it is the general routine which causes improvement.

CONCLUSIONS.

1. Mercurial preparations given in pulmonary tuberculosis are far from being specific in their action.
2. Injections of the succinimid produce pain which is at times quite severe.
3. The best results are obtained by the administration of mercury in those cases of pulmonary tuberculosis in which syphilis seems to have some bearing upon its etiology.
4. Large doses of mercurial preparations are harmful in pulmonary tuberculosis in that they cause a breaking down of the tuberculous area.
5. It is inadvisable to give potassium iodid as part of the treatment because it may produce a reaction similar to that of an overdose of tuberculin.
6. Intramuscular injections of the succinimid sometimes produce indurations at the site of injection which persist for many months.

420 Rose Bldg.

An Analysis of the Principal Causes of the Infant Mortality of Cleveland for 1908 and 1909.

By A. F. FURRER, M. D., Cleveland.

While preparing a lecture, recently given under the auspices of the Babies' Dispensary and Hospital at some of our public schools, the writer made an attempt to study the city mortality statistics for the year 1908. The statistics for 1907 pertaining to infants will be found summarized in a paper entitled "A Modern Babies' Dispensary," read by H. J. Gerstenberger, on February 20, 1908, before the Academy of Medicine of Cleveland.

Since this paper was started the returns for 1909 were rendered available and a brief summary, as well as a comparison of these figures, will therefore be included.

Although many physicians are aware of our high infant mortality and some of its principal causes, the exact figures, and particularly the appalling rôle played by the gastro-intestinal diseases is still not realized by the profession generally. That such is the case is attested by the relatively high mortality recorded under such vague, unsatisfactory and general terms as convulsions, or congenital icterus debility and sclerema.

Out of a total death rate of 7177, for the year 1908, 1801 (25%) occurred in infants under one year of age. The figures for 1907 and 1909 give about the same ratio. These 1801 deaths in infants are classified as follows:

1.	General diseases	102
2.	Diseases of the nervous system and organs of special sense	350
3.	Diseases of the respiratory system	211
4.	Diseases of the digestive apparatus	493
5.	Congenital icterus debility and sclerema	445
6.	Unspecified or ill-defined causes of death	77

Of the 102 cases recorded under general diseases, syphilis accounts for 30; measles 15; scarlet fever, whooping cough and diphtheria 25.

Of the 350 cases classified under diseases of the nervous system and organs of special sense, 304 will be found recorded as due to convulsions of children.

Of the 211 cases classified under diseases of the respiratory system, acute bronchitis is responsible for 96, pneumonia for 67 and bronchopneumonia for 38.

Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, January 7, 1910.

Of the 493 deaths classified under diseases of the digestive system, 447 will be found under the subheading—diarrhea and enteritis.

"Early infancy" is considered responsible for 445 deaths, 431 of which will be found under the subheading—congenital icterus debility and sclerema.

Under unspecified or ill-defined causes of death 77 cases are recorded.

So far, then, the so-called severe infectious diseases play but a very small part in the mortality of infants and the diseases of the respiratory system, although responsible for twice as many deaths, are also of little importance comparatively. We learn also that acute bronchitis appears to be more often fatal than pneumonia and that death from pneumonia is diagnosed about twice as often as death from bronchopneumonia.

The writer was much interested to note that over 300 deaths recorded as due to convulsions in children should be classified under diseases of the nervous system and organs of special sense, and that no provision is made for the grouping of any part of this number where most of them undoubtedly belong, e. g., under diseases of the digestive apparatus.

Likewise of the 445 deaths recorded under "early infancy," 431 will be found classified under the convenient, perhaps, but unsatisfactory and altogether misleading title—congenital icterus debility and sclerema.

It is true that congenital icterus when due to maldevelopment of the bile-ducts would undoubtedly be associated with debility and sclerema.

It is true that congenital icterus when due to maldevelopment of the bile-ducts would undoubtedly be associated with debility and possibly with sclerema, but those cases are so rare that they could probably be counted on one hand.

Many of these "early infancy" cases, and probably the vast majority of them, were born weaklings, due to prematurity or hereditary disease, and died for lack of intelligent breast-feeding, overfeeding, or want of care generally. If the likelihood of this is admitted it is probable that most of these cases presented symptoms referable to the digestive system during the short period of their lives and if so, belong under the main classification of diseases due to the digestive apparatus.

Returns for 1909.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Total deaths (all ages)	559	538	682	623	601	492	639	637	554	562	513	632	7032
Infant mortality: All causes	133	148	170	142	117	99	204	213	137	126	108	114	1711
Principal causes only:													
Diseases of nervous system	30	18	29	20	15	11	5	16	9	11	12	23	199
Diseases of respiratory system	28	36	37	29	22	13	9	6	12	20	12	22	246
Diseases of digestive system	19	23	38	24	19	31	139	136	76	30	36	29	600
"Early infancy"	30	42	43	38	27	26	27	33	30	41	31	29	397
Subheadings:													
Convulsions in children	18	12	25	16	12	8	3	10	2	7	7	20	140
Congenital icterus debility and sclerema	26	40	40	37	25	25	25	29	30	37	27	28	369

Resume

The infant mortality in Cleveland is approximately 25% of the total death rate. (1907, 1908 and 1909.)

The so-called severe infectious diseases play such a small part in the causation of this mortality that they are comparatively unimportant. Scarlet fever, whooping cough, diphtheria and tuberculosis together causing but 50 deaths out of 1800.

Diarrhea and enteritis, convulsions and "early infancy" or in other words the gastro-intestinal diseases were directly or indirectly responsible for about 1200 deaths, which represents two-thirds of our total infant mortality.

The figures for 1909 will be found to correspond closely to those of the year previous in every particular except that a moderate decrease in the cases formerly included under the headings convulsions and "early infancy" and a corresponding increase under the heading diseases of the digestive apparatus.

The present classification of diseases pertaining to infants as reported in our city mortality statistics should be revised.

1110 Euclid Ave.

Review of the Progress in Pediatrics.

Conducted by HELEN HEMPSTEAD, M. D., Cleveland.

1. Digestive Insufficiency after Weaning—Heubner.
2. Viscosity of the Blood—Trumpp. Amerling.
3. Exudative Diathesis and Scrofula—Czerny.
4. The Physiological Calcium Need of Children—Schabad.
5. Enlarged Thymus—Baehier. Veu and Olivier.
6. Specific Treatment for Pylorospasm in Infants—Rosenhaupt.
7. Position of the Apex Beat in Children—Sawyer.
8. Rheumatism in Children—Carr.
9. Immunity after Infectious Diseases—Widowitz.
10. Etiology of Poliomyelitis—Romer.

DIGESTIVE INSUFFICIENCY AFTER WEANING.

Heubner (*Jahrbuch für Kinderheilkunde,* Dec., 1909) discusses a severe type of digestive disturbance seen in children after weaning, of which he records 10 cases. The disease is chronic and begins in the second or third year. Two classes of cases are found: those which begin abruptly after the first or second years have passed without digestive disturbances, and those following difficult feeding cases in which the trouble apparently becomes chronic. There are cases in which, after a long period of successful nourishment, digestive disturbances occur and the weight stands still or decreases. It is characteristic that without change in diet the weight will decrease or remain stationary perhaps for one to two years. Each change in the diet may cause an increase in weight and renewed hope; but soon the weight again decreases and eventually a condition results resembling the atrophy of infants. The stools resemble the lime-soap stools or they may be of the dyspeptic type. The cases occur among the best of conditions. In these children, a slight chilling or a sultry day may cause an attack of digestive disturbance which resembles a bacterial infection but neither colon, streptococcus, Shiga nor Flexner organisms are found in the stools. Heart weakness and interrupted sleep complicate matters. The trouble Heubner believes to be a congenital insufficiency of the digestive tract which cannot tolerate milk, which part of the milk is not known, though it is not alone the fat. The ferment necessary for carbohydrate digestion may be insufficient or lacking. The best treatment is breast-milk, one patient having it until the eighth year. Asses' milk, egg proteid, Finkelstein's diet for atrophic babies, and meat juice are valuable. There is little hope in pharmacy but the physician should never despair. Tuberculosis could be excluded. The organs were normal but as soon as breast-feeding ceased this defect in the digestive apparatus became apparent. Neuropathic, weak, overworked parentage was frequently noted. Heubner believes his cases to be identical with those described by Herter as infantilism due to intestinal inflammation from persistence of the flora of the nursing period and to those cases described by Schutz in 1905. He, however, believes the cause of the disturbance to be a functional weakness of the whole digestive canal.

VISCOSITY OF THE BLOOD.

Trumpp (*Münch. med. Wochenschrift,* Oct., 1909) contributes to the science of viscosimetry results obtained from the examination of 152 children, mostly institution children. He found the average of viscosity in children to be 3.65, in healthy infants 3.2 to 3.6 and in healthy children from 7 to 13 years, from 3.75 to 4.1 Hess gives 4.5 as the average for adults. Viscosity falls after birth. The mother's blood averages one-third less than that of the new born child. An increase came with icterus neonatorum. In a case of cyanotic, newly born child the viscosity measured 12. In a case of splenic anemia it was 2.1 Hyperviscosity occurred in cases of venous stasis. In the acute stage of alimentary intoxication there was a hyperviscosity which regularly lessened as the case improved. He found that a water retention or water loss in children with disturbed nutrition was at once indicated by the viscosity of the blood. The hemaglobin of the new born he found was 90 to 100, while in healthy children it was about 70. He prophesies a great diagnostic and prognostic future for this new science.

Amerling (*Zentralblatt für Kinderheilkunde,* Oct., 1909) also reports measurements of viscosity. For the first six months he finds it averages 4.4 Every unexpected increase in viscosity was followed by disease.

EXUDATIVE DIATHESIS AND SCROFULA.

Czerny (*Jahrbuch für Kinderheilkunde,* Nov., 1909) describes again the condition which he calls exudative diathesis. In children who have this constitutional anomaly the characteristic symptoms may come even with breast-milk feeding. The normal weight curve of the first year mounts very rapidly, more slowly later. The rapid rise is due chiefly to a great intake of water since most of the material necessary for life is in the body at birth, the slower rise corresponding with the period when new building material must be introduced from without. An analogy is found in plants which grow from the seed to a large size needing only water, as the necessary nourishment is in the seed, but further growth requiring new building material from without. The normal child brings with it such a great reserve of body substance that up to nine months it can get along with a poor breast-milk or substitute feeding. The abnormal child with this exudative diathesis, sooner or later, in spite of suitable diet will show disturbances in digestion. In proportion to the kind of congenital defect the digestive disturbance expresses itself as rickets, anemia, status lymphaticus, overexcitability of the nervous system, or as a disposition to oozing, eczema, strophulus and a catarrhal condition of the mucous membranes, especially of the air passages. The first two years are of greatest importance for the development of this diathesis. The nourishment is only a secondary influence. The author surmises that fat metabolism is the chief cause of the disturbance, since those children who endure fat in only limited quantities regularly show signs of the diathesis. Others, Finkelstein and L. F. Meyer, blame the salt exchange. Overfeeding with milk and eggs, as in the prophylaxis and therapy of tuberculosis, will call forth the manifestations, so exudative diathesis is now the plague of children of the well-to-do, as scrofula was formerly of the poor. As the von Piquet reaction proves that a relatively small percent of children in the first year have tuberculosis, this reaction proves that there is nothing in common between the diathesis and tuberculosis. With appropriate feeding predisposed children may remain during the first year free from symptoms. Intense symptoms may follow vaccination, or the cutaneous or subcutaneous applications of tuberculin, or measles, or a florid or complicated tuberculosis. There is no more scrofula seen at the Breslau children's clinic in the tuberculous section, since by dietetic measures the exudative diathesis is prevented. The condition is an hereditary clinical entity and is strongest in the first year, subsiding in the second year, and being almost absent in adults. It is not found more in tuberculous families but often in neuropathic or psychopathic families. It has increased extraordinarily recently and its occurrence is equaled only by rickets. In the treatment, overfeeding, especially with milk and eggs must be avoided and the nourishment medium must be reduced to a minimum. A carbohydrate diet must also be avoided. The cause of the diathesis is a congenital defect in the chemistry of the body, a defect in the tissues regulating the water fluctuation of the body. It is as amenable to treatment as is diabetes.

THE PHYSIOLOGICAL CALCIUM NEED OF CHILDREN.

Schabad (*Archiv. für Kinderheilkunde,* Dec., 1909) contributes to the subject of mineral content of healthy and rachitic children and to the physiological calcium need of children. He concludes that in rachitic bones the water content is increased and the dry substance decreased, the ash reduced and organic substance decreased. In pronounced cases the water may be 66% and the proportion of ash to organic substance in dry bone may reach 20:80 as against 60:40 in normal bones. The ratio of calcium to phosphorus also changes, the calcium decreasing and phosphorus increasing. In the first year 16% of the body weight is in the skeleton, the calcium content being 1.25% of the body weight and 7.7% of the skeletal weight. The highest grade of physiological calcium deposit falls in the second to fourth months in naturally fed, and in the second to sixth month in artificially fed children. The calcium retention from mother's milk may be 70%, from cow's milk 30%. The calcium content of mother's milk varies from .047% to .036%, so only a maximal amount of lime will cover the physiological needs of the body during the second to fourth months. Although the lime content of cow's milk is four times greater than that of breast milk, it is only by using whole or two-thirds milk during the period of greatest lime need that the need is covered, while cow's milk is two and a half times less assimilable than breast-milk. As during the first half year the milk is usually diluted one-half or more, in artificially fed even more than in naturally fed children there comes a disproportion between the calcium need and its supply. This disproportion may occur also in naturally nourished children. In experimental rickets although clinically, chemically and anatomically (gross) there is no difference from spontaneous rickets, histologically it is a pseudorachitic osteoporosis. In children also this pseudorickets due to an incomplete calcium supply is found.

ENLARGED THYMUS.

Baehier (*Archives de Medecine des Enfants,* Nov., 1909) believes that sudden death due to an enlarged thymus is seldom unpreceded by symptoms which should have been recognized and relieved. He does not believe that laryngismus stridulus nor glottic spasm should figure among the thymic accidents. He places among them attacks of cyanosis, or of suffocation and sudden death, which rarely come without prodromes, previous attacks of dyspnea or suffocation. It often occurs in those cachectic children who are suspected of having hereditary lues. The death often is provoked by trifling causes, injection of antidiphtheritic serum, application of salicylic compresses or surgical anesthesia. The dyspnea is augmented by extension of the head, by a lying position or examination of the throat with a tongue depressor. The symptoms are due to compression of the trachea. The condition shows physical signs, of arching of the sternum and the classical triangular dulness at the base of the sternum which is continuous with the cardiac dulness. More importance should be attached to the signs of compression in the great veins in the neck and to the exaggeration of the dyspnea by extension of the head. The author believes with an osseous trouble as a predisposing condition, the enlarged thymus causes temporary deformity of the chest which, in older children, becomes permanent as the keel-shaped or funnel chest, and which has been attributed, with much exaggeration, to nasal obstruction. The author reports three cases and collects 14 other reported cases in which operative interference was used.

Veu and Olivier in the same journal discuss the surgery of these cases. In all patients showing dyspnea operated upon, the condition has been modified or radically cured from the first. They believe that cases showing attacks of suffocation in which tracheobronchial glands, foreign body, and vertebral abscess can be eliminated should be operated on. Considering the benignity of the operation the authors believe that all children showing attacks of suffocation without apparent causes should be submitted to thymomectomy. They believe in two causes of stridor: a laryngeal stridor and a thymic stridor, and do not advise operation for stridor alone. They have never observed dysphagia due to enlarged thymus. They conceive of the possibility of an enlarged thymus, by compression of the veins, causing edema, which for relief would indicate operation. They propose operation in view of the ineffectual therapy in cases of eczema which classical authors attribute to enlarged thymus. The physical signs which they consider of value in determining an operation are suprasternal mass felt during cough or expiration especially, and percussion dulness, which is of value if present but its absence is no reason for witholding an operation. Of the operations suggested—exothymopexy, resection of manubrium, thymomectomy—they recommend a subtotal, subcapsular thymomectomy. Chloroform is advised as a general anesthetic. Of the 17 collected operated cases, 15 were immediately cured, one showed progressive improvement and one died three weeks after operation.

SPECIFIC TREATMENT FOR PYLOROSPASM IN INFANTS.

Rosenhaupt (*Deutsche med. Wochenschrift,* Oct., 1909) recommends rectal saline infusions as a specific treatment for pylorospasm in infants. He bases his treatment upon Engel's observation of an infant with jejunal fistula in whom the pylorospasm was due to the flow of gastric juice. This gastric juice secretion is the expression of a constitutional secretion neurosis which he believes is analogous to hyperacidity of adults. Why then would not treatment to prohibit this flow be specific? From animal experiments he felt that salt solution per rectum was the ideal means for its accomplishment and he has had only one unsuccessful case in babies, that case showing postmortem an extremely contracted stomach.

POSITION OF THE APEX BEAT IN CHILDREN.

Sawyer (*The British Journal of Children's Diseases,* Dec., 1909), after studying the position of the apex beat in children, concludes that up to the third year the apex beat is normally situated without the mammary line, in the mammary line from the third to the tenth, after this age it gradually assumes the adult position. Even at 15 years in a third of the cases the apex beat was found in the mammary line, which large number may be due to the badly developed chests.

RHEUMATISM IN CHILDREN.

Carr (*The Practitioner,* Nov., 1909) regards rheumatism as second only to tuberculosis in seriousness among the children of England. In the Victoria Hospital, Chelsea, 50% of the children were suffering from rheumatism or its consequences, chorea or heart disease. Rheumatism is not far behind tubercle in the variety of its manifestations, the heart, blood, nervous system, joints, pleura, throat and skin suffering in some degree. Most of these disorders are likely to recover but the heart damage is usually irreparable. Rheumatism in children would more correctly be described as primarily a heart disease with synovitis as a possible, usually slight, complication. In early life the heart is the most vulnerable part of the body to the rheumatic poison. Physicians often do not appreciate the seriousness of rheumatism in children because of the indefinite symptoms. If the patients are allowed up too soon the increased strain upon the mitral valves not yet recovered will lead to a subacute inflammation. The endocardium always suffers also. Valvular disease in the child is so serious because it interferes so materially with the nutrition of the growing tissue. Relapsing, subacute attacks of endo- and pericarditis and of myocarditis are very apt to occur in children. To distinguish these attacks from a transient malaise or slight failure of compensation the author relies chiefly upon the presence of subcutaneous fibroid nodules which are usually associated with recurring attacks of rheumatism; any pyrexia especially in the evening; joint-pains; a sudden development of or increase in anemia; and an excessive or persistently rapid pulse. The wisest treatment is prevention, and children in rheumatic families should be kept in bed upon the slightest malaise and if symptoms are not of some obviously non-rheumatic affection aspirin or salicylate of soda should be given. Absolute rest in bed for an average of six weeks is the most essential point in treatment. A light diet, laxatives and salicylate of soda, which though comparatively ineffectual is desirable until something better is discovered, are recommended. Strychnin and caffein, not digitalis, are recognized as the best stimulants and cod-liver oil as the best tonic.

IMMUNITY AFTER INFECTIOUS DISEASES.

Widowitz (*Wiener klin. Wochenschrift,* Nov., 1909) in considering the subject of repeated attacks of infectious diseases finds that no lasting immunity is conferred by diphtheria, streptococcus or staphylococcus infections, (angina follicularis, articular rheumatism) nor erysipelas. Scarlet fever gives usually a lasting immunity, return attacks being doubtful. Whooping cough confers immunity always to a certain age, about to the thirtieth year, after which a return attack seldom occurs. Usually whooping cough confers lasting immunity. Measles and rötheln also probably, chickenpox and mumps give a lasting immunity.

ETIOLOGY OF POLIOMYELITIS.

Romer (*Münch med. Wochenschrift,* Dec., 1909) investigating the etiology of epidemic poliomyelitis concludes that the exciting cause is, in all probability, not an easily demonstrated and cultivated bacterium but that only this negative characteristic can be given. The virus is found in the brain and cord of those dying of the disease and is transferable by intracerebral inoculation of apes. Through intracerebral inoculation of the brain and cord of artificially produced ape-poliomyelitis further cases are produced. Thus the possibility of a production in vivo of the virus is shown.

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EDITORIAL.

IN MEMORIAM.

Henry Kirke Cushing, M. D., LL. D., born July 29, 1827, died February 12, 1910.

Dr Henry Kirke Cushing, for many years a prominent family practitioner and medical teacher, died in this city on February 12, 1910. He retired from practise about 18 years ago. His health failed quite rapidly during the last few weeks but his mental faculties were retained and he showed his usual keen interest in current events to the day of his death.

Dr Cushing represented the type of medical man now rapidly becoming obsolete; for about fifty years he had the confidence of a very large number of the old and more prominent families of Cleveland, among whom his name was, as was the name of his father, a household word. No one ever came in contact with Dr Cushing without feeling that he was in the presence of a strong personality; a man of extensive learning. In his days of active practise I regarded him as the most symmetrically developed medical man of my acquaintance. He could have delivered a creditable course of lectures in any of the practical departments of medicine. He was a man of fine intellect, endowed with quick and clear perception; he was always a student and was constantly accumulating knowledge both miscellaneous and professional. I have rarely met a man who had accumulated more extensive and useful information. There were few topics of literary or scientific information to which he had not given a certain amount of attention. It was in his extensive miscellaneous reading that he found his most agreeable recreation. He had a most retentive memory and his statements regarding any subject were always most accurate. Accuracy, indeed, was with him a marked characteristic. He was a graceful and forceful speaker and a most instructive and successful lecturer, never diffuse but always direct and making clear every topic he discussed. He inspired marvelous confidence in patient and pupil by his self poise and quiet speech. He contributed in many ways to the advancement of medicine in Cleveland, and his name will ever be an honored one in our medical annals. He took a prominent part in organizing and sustaining the various medical societies that came into existence during his days of active work; and was often made to hold offices of honor, in spite of protest. There is no question but that his efforts and influence aided materially in placing the medical department of Western Reserve University among the first medical colleges in the land. The H. K. Cushing Laboratory of Experimental Medicine is but one of the many proofs of this assertion. Dr Cushing was Professor of Obstetrics and Diseases of Women and Children in the Medical Department of Western Reserve University from 1856 to 1878. In 1878 he was made Professor of Gynecology, which chair he filled until 1884, when he was made Emeritus Professor of Gynecology. In 1880 Dr Cushing was appointed a trustee of the Western Reserve University, and in 1884 the University conferred upon him the degree of Doctor of Legal Laws. During the Civil War Dr Cushing served for a time as Surgeon-Major in the Seventh Ohio Volunteer Infantry. He was a member of the Rowfant Club and a member of the Military

Order of the Loyal Legion of the United States. The following abstract from a letter to the writer from General Geo. A. Garretson, a prominent member of this latter organization, will throw light on Dr Cushing's connection with it:

"Dr Cushing was a very close student of military matters, both National and International, and was one of the best posted men in the country on army and navy affairs, not only of our own but of foreign countries. He was very much interested in the Military Order of the Loyal Legion, of which he was an honored companion of the Ohio Commandery. At one time he was Senior Vice-Commander of Ohio, and by virtue of that rank became a member of the National Commandery in Chief. He always took an active and interested part in the work of the local commandery and was a regular attendant at their meetings when his health permitted and contributed several papers for these meetings which were afterward published. His general knowledge of military matters and his experience as a surgeon of our army in the field, made these papers very interesting and instructive. No member of the Order was more honored and respected than was Dr Cushing, and I feel that his connection with the Loyal Legion was one of his principal sources of pride and pleasure, especially during the last years of his life."

The writer enjoyed a close friendship with Dr Cushing for 37 years; he desires with sincere gratitude to put on record his obligation to him for his many acts of kindness; for his wise counsel so often given; for his skilful advice in many a difficult case, given often at the expense of his personal comfort. The young stranger he befriended, and to whom he extended a welcome hand, will ever cherish his memory as that of a high-minded gentleman, a learned physician of a type soon to be seen no more forever. H. H. P.

Modern Cytology and Medical Investigation.

Modern results of modern cytological investigations are so varied that they have application along many lines. Many facts which have been established, particularly by the zoologists, are applicable to medical problems and cannot help but illuminate and widen some paths that are dark and narrow. Since Virchow laid the foundations of cellular pathology we speak as if we were, in truth, dealing with the pathology of the cell, when, to be candid, we have advanced little beyond the acceptance of the fact that cells help to make up pathological lesions. Pathological histology is still what the term implies, an objective description of altered tissues, without any very successful attempts at explaining the real and intimate nature of the changes or of the sequence of events which led to their production. True, experimental pathology is attacking the latter side of the question through the use of the experimental methods which have been of value in the study of mammalian physiology. But since the bulk of mammalian physiology has itself not gotten beyond the investigation of organs, the application of its methods to pathology can hope to clear up only problems in the functional pathology of organ systems and not the obscure fields of abnormal cellular anatomy and physiology.

Earlier cell studies, after the doctrines of Schleiden and of Schwann were definitely accepted, concerned themselves chiefly with the germ cells and with the phenomena of mitosis associated with fertilization. The results obtained helped to establish our present ideas of heredity—but tended to make the nucleus, and particularly its chromosomes, supreme in the life of the cell. With the use of protozoa as a material for cytological investigation our knowledge of the cell has been greatly broadened. Since these organisms have at the same time the potentialities of germ cells and the physiological activities of individual beings our conception of the cell has undergone a certain amount of change.

Rhumbler, Verworn, Jennings and others have studied the reactions of protozoa to physiological stimuli—through investigations upon individuals which happen to be single cells we are coming to some knowledge of the responses of normal living protoplasm. The work of Calkins, Maupas and R. Hertwig has laid the foundations of investigations whose aim is the correlation of morphological variations from the normal with altered physiological conditions. The investigations of R. Hertwig and his pupils, leading to the establishment of the doctrine of the nucleus-plasma relation and of its corollary of the mutual interdependence of nucleus and cytoplasm, are of extreme importance and must be helpful in the solution of a number of problems concerned in the pathology and physiology of the metazoan cell. Facts which have been established and which give an insight into some of the phenomena concerned in depression, physiological degeneration and death, in the recovery from depression, in cell regulation and the maintenance of a proper balance between nucleus and cytoplasm, in the participation of the nucleus in vegetative cellular activity may help us to arrive at a truer understanding of some of the processes which play a part in tumor formation and proliferation and in the pathological changes now included under the degenerations, hypertrophies, hyperplasias and metaplasias.

Ultimately, when we shall have attained a modest insight into the so-called vital phenomena, the morphological changes, which make up pathological histology and which the pathologist is now content merely to catalog, will be explained as to their origin and mode of production and will be found to consist largely of the results of aberrations, alterations and augmentations of normal cellular physiological activities. O. T. S.

New Light on Transmission of Typhoid by Flies.

In two recent articles in the Royal Army Medical Corps Journal of England, Major Faichnie has laid much stress on the presence of typhoid bacilli in the intestinal tracts of flies bred in typhoid-containing night-soil. He is inclined to believe that most of the cases of the disease in which flies are the active agents, are due to contamination from their droppings and not from the organisms clinging to their legs. His evidence comes under two heads, circumstantial and experimental, and the two parts fit well together. In India it is apparently the custom to trench in the material from the latrines at certain intervals and to leave the place untouched for some time. Major Faichnie has observed new-hatched flies with clean legs issuing from the surface soil which has been untouched for so long that the hot Indian sun has thoroughly baked and sterilized the surface, so that no gross particles would be likely to cling to them, and has found typhoid bacilli in the intestines. In his opinion the fact that latrines and the wagons carrying the night-soil are highly carbolized makes it unlikely that the flies would approach them and obtain additional surface contamination. Flies caught in the nearest infantry kitchen have been found to contain the specific organisms after the surface has been thoroughly flamed to sterilize the legs and wings. He further compares the conditions at two English towns, Hull and York, in the former of which there are large numbers of earth-closets which by the regulations must be cleared out once a week, while in the latter there are the so-called "privy-middens" where all the household refuse is mixed with ashes and stands till the receptacle is full. The large excess in typhoid incidence and mortality in York is set down to the fact that inasmuch as the breeding time of the fly is 10 days there is time for the development of a swarm while the frequent emptying of the Hull privies prevents this.

These observations led to experimental work along the same lines under proper observation and control. Flies were allowed to breed in screened dishes containing earth and typhoid feces in one case, and earth and paratyphoid feces in the other, the organisms having been duly checked by the usual methods. As the larvae were hatched they were removed to a sterile plate and fed on sterile typhoid-free food. Examinations of the hatched flies at intervals up to 16 days showed the presence of the typical organisms in the intestines in all but one case, and cultures from the droppings in sterile bottles gave similar results.

Criticism of the methods employed would attack only the degree of the conclusions. The bodies of the flies were for the most part flamed before they were put into washing solutions to test for the presence of typhoid on their legs, and in some cases in which this was not done the organisms were found. Furthermore with regard to cultures from the droppings the flies were allowed to walk around the inside of the sterile bottles till they had made an adequate amount of droppings after which salt solution was introduced and cultures made from this. There is, of course, a possibility that some organisms might be attached to the bodies and legs, for although the insects had been removed for some time from the contaminated soil they may well have been contaminated by their own droppings.

But notwithstanding these more or less academic criticisms certain facts do stand out clearly. Like the flea in plague the fly bred in typhoid or paratyphoid feces and presumably also in dysenteric feces, carries in its intestinal tract the specific organisms of the disease in a purely mechanical way, and deposits them everywhere in its droppings, which are known to be very frequent. The organisms persist for a long time, at least 16 days, so that we must keep in mind that the danger from an unprotected latrine does not disappear with the protection of it, but lasts for a variable time afterwards, and that flies from an unprotected camp may be carried to a protected one and there infect the kitchens.

The direct evidence that the fly may and doubtless does carry the specific organisms on its legs must not however be forgotten and the chief value of the papers here discussed is to bring further evidence of the great importance of the fly control in typhoid prophylaxis.

Another point worth reference is that in spite of the disinfection of the latrines and the night-soil carts, which is referred to in an incidental manner, the typhoid bacilli were apparently not killed by the process, which leads to the suggestion that perhaps more work is necessary in determining how far the use of disinfectants in enteric cases, as now practised, is actually satisfactory. It is to be hoped also that the author or some other observer will make further experiments to determine the maximum length of time through which the typhoid or other bacilli remain viable in the fly intestine, and whether they show any tendency to lose virulence under these circumstances.

R. G. P.

The New St. Ann's Maternity Hospital.

The formal opening of the new St. Ann's Maternity Hospital, Feb. 7, 1910, marks an event of unusual interest both to the laity and the medical profession of Cleveland. To the laity, because it offers to the woman about to pass through the perils of childbirth not only all the safeguards of a completely equipped hospital but also all those home comforts which seem to be so essential to the well-being of this class of patients and for lack of which the average hospital holds out no incentive for the prospective mother to leave her own well-appointed home. As a matter of fact, a general hospital rarely welcomes an obstetric patient, admitting only those who must undergo a major surgical operation. To the physician, because it enables him to conduct his labor cases, of whatever nature, with that strict regard for surgical cleanliness which every woman in childbirth and after, has, at least, an inalienable right to demand.

The dedication services were conducted by Rt. Rev. Bishop Farrelly, who delivered a very appropriate address to the sisters in charge. The bishop was assisted by Rev. Joseph Smith, whose address included an interesting summary of the history of St. Ann's Maternity Home.

During the afternoon and evening the building was thrown open to the public and more than two thousand friends of the institution were received, universal surprise and pleasure being evoked by the rich furnishings and complete equipment.

The hospital is four stories high and was erected and furnished at a cost of approximately $55,000.00. It occupies one corner of the spacious grounds at Woodland Ave. and East 35th St. and is connected by a passageway to the old maternity building, which was formerly a private residence and which for a long time has been unequal to the demands made upon it.

In the first story, partly below the ground level, are the dining rooms for the sisters, nurses and medical house officers; a large recreation room for the sisters, and a spacious assembly room for lectures and the various ladies' societies connected with the work of the hospital. Ample china and linen closets occupy the remaining space.

The main entrance is on the second floor, from which a 12-foot hallway extends to the chapel, with a seating capacity of 100, in the rear. On either side of the hallway are the private rooms; four, with linen-closet, on the east side and three, with reception room and diet-kitchen, on the west side.

On the third floor the same plan is followed, the lying-in department being at the end of the hall above the chapel and separated from the rest of the building by two sets of sound-proof double doors. On this floor are also a diet-kitchen, reception room and linen-room.

On the fourth floor there are, in front, six private rooms, three on either side of the hallway, with bathroom and diet-kitchen, and, in the rear, the sisters' dormitory, of eight rooms, four on each side of the hall. These rooms can be easily converted into private rooms if future needs demand.

From this floor a flight of stairs gives easy access to the flat roof, which may be used as a roof garden.

An automatic electric elevator runs through all the floors, with an ambulance entrance on the ground level. In addition two fireproof stairways connect the various floors.

A notable feature, and one which is unique, so far as we know, in this section, is the number of bathrooms. On the second and third floors, six rooms have each a private bathroom, and each two of the remaining eight have a bathroom between them. On the fourth floor, one bathroom is provided for the six rooms. All bathrooms have tile floors and vitreous-ware furnishings.

Each diet-kitchen has a refrigerator, china-closets, sink and gas stove, with bake and warming ovens and broiler.

The 20 private rooms were completely furnished by donations. Three rooms were furnished by three business firms, four by one donor and 13 by a like number of donors, one of the latter also furnishing the two reception rooms. An idea of the rich character of this equipment can be best conveyed by stating that the contents of these 20 rooms represent an expenditure of $5,000.00.

Five rooms are set apart for the lying-in department, a delivery room 20 x 30 feet, an instrument room, sterilizing room and surgeon's washroom, with tile floors and white enamel finish. The sterilizing outfit was installed by the American Sterilizer Co. and consists of a high pressure autoclave, two 25 gallon hot and cold water tanks, bowl and instrument sterilizers.

The instrument cabinet contains a complete outfit of obstetric instruments and appliances for the proper management of any abnormality or the performance of any operation required. White enamel tables, chairs, irrigators, plungers, etc., complete the equipment.

Seven donors contributed to the fund of nearly $2000.00 raised by the members of the medical staff to equip this department and to give to it the name of their honored chief, Dr H. H. Powell, who has been medical director of the institution since 1884.

The nursing force is made up of members of the Charity Hospital training school, who obtain their obstetric training here, and a number of young women who are especially adapted, by nature and inclination, for obstetric nursing. The course for the latter extends over 18 months. Patients are also permitted to bring in their own nurses, if they desire to do so.

The facilities of the hospital are open to any physician in good standing who wishes to avail himself of them.

It is unquestionably true that the hospital eliminates many of the unpleasant features attendant on obstetric practise.

St. Ann's Maternity Home and Infant Asylum was founded in 1873 and for a time occupied a small frame building on Garden St., now Central Ave., on the Charity Hospital property. Later a three-story brick building was erected on Marion St., on the same property. This building was occupied until 1901, when the growth of the institution necessitated larger quarters and the present site was secured.

For many years the purpose of the founder, Bishop Gilmore, viz., to care for unfortunate girls only, was strictly carried out, but in time the advantages of hospital care in confinement began to be recognized. The character of the work rapidly expanded and married women in increasing numbers demanded admission. This demand was largely instrumental in bringing about the removal from Marion St., and now, nine years later, the increase in the number of private cases has necessitated the present new hospital.

During the year 1909, 400 patients were delivered, 200 of whom paid full rates, and most of whom were married women. No similar institution in this country, if, indeed, in the world, has shown better morbidity and mortality rates. A children's department is also maintained, with an average of 150 patients. Nearly 700 patients were cared for during 1909.

The success of the institution is in very large measure due to the untiring energy and self sacrifice of the sisters of St. Augustine, who devote their lives to this praiseworthy work.

J. J. T.

The Doctor's Gig.

In the pagan days of priestly medicine, practise was a sedentary occupation. The healer sat in his temple and did office work—those who wished his services had to come or be brought. Even in the much later days of Christian miracles, conjunction of patient and healer must have occurred in a similar fashion, as the crutches left at shrines indicate. But it must have been the influence of Mohammed, when he made his memorable trip to the mountain that could not or would not come to him, perhaps also the development of humanitarianism, which established the custom of the medical visit. To obtain a low mortality rate for publication in the *Caesarean Chirurgical Gazette* the medicus realized that many patients could not or should not be moved. The sandal, propelled by the vital engine which used homemade myosinogen for fuel and was equipped with a complicated muffler for the, in general, noiseless discharge of the products of combustion, must have been the chief mode of progression. But since medical journals then did not have long lists of collaborators to relieve the editors of drudgery and had to be issued in small editions upon bricks, stone, hides, papyrus, etc., they did not have a wide circulation and many details have been lost to us.

We must skip much of history until we come to the period when the physician had become a personage of great influence and dignity in his community, when the practise of medicine no longer bore the same relation to the barber's art that shaving the back of the neck does today. Then he went to his patient in state, in a closed chaise as much like that of royalty as he could afford to maintain. Although we have not the actual proof at hand we are quite sure that the more successful practitioners of those days must have made their visits in all the splendor of outriders and postillions.

Those were the times of luxurious ease, particularly in England and France. In America the doctor has ever been a pioneer. He has been at the forefront of civilization and has had to use any means of progression whatsoever that would take him through an unbroken country. The doctor's gig, therefore, varied from a serviceable pair of cowhide boots to a well-made buggy drawn by two horses. Many of us can still remember the saddle-bags that were a necessary part of our forebears' professional impedimenta in winter, and although a fracture of the arm due to a kick from a crank-handle was unknown at that time the writer recalls, as a companion piece to the saddle-bag, the splint that was required for a fracture of the paternal femur produced by the kick of the then useful horse.

Frontiers are disappearing, even in America, and this is a mechanical age. With improvement in the condition of roads the automobile is replacing the horse in the physician's professional peregrinations. This change works great advantage to the doctor and little detriment to the horse. Almost any horse can find easier work than being the traveling companion of a busy practitioner. And for the latter the automobile means an immense saving in time and in bodily and mental energy. Under proper road conditions there must also be a considerable economy in the cost of maintenance. Certainly in the city the automobile, while not so picturesque or distinctive as the doctor's gig of old, is much more serviceable and is replacing the latter. For a successful city practise it has become almost as necessary an adjunct as a diploma and a license. O. T. S.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Chorea: John Allen in the *American Journal of the Medical Sciences,* says that the treatment of chorea in children while generally satisfactory is sometimes a matter of difficulty, and the disease may effectually baffle the resources of the practitioner. When we consider that in many instances chorea is a rheumatic manifestation (and there is considerable proof that it is entirely so), that the child suffering from the disease may be subjected to much teasing and may be punished unjustly, it is evident how important it is that prompt and appropriate treatment should be enforced. The first point in the treatment of patients suffering from chorea is rest, and without rest any other treatment will be futile. This applies to all cases, whether of the acute or chronic types, and for a child this means treatment in bed because in no other way can rest be insured. In cases of acute or semi-acute nature, isolation is often required and dieting is considered by many to be an important desideratum in the treatment. As to drugs, those which have been recommended for chorea are legion, and while it is doubtless true that many cases would recover with simply rest, good food, and nursing, he feels sure that the cure is hastened and convalescence shortened by certain drugs. Of the drugs usually employed he has had special experience with six, namely, antipyrin, potassium bromid, sodium salicylate, chloretone, arsenic, and acetyl-salicylic acid. The first three he has found of little use, and has never been able to satisfy himself that they exercised any beneficial effect on the morbid process. Salicylate of sodium has been in his hands an absolute failure. While recovery followed in those cases in which he used chloretone, it is doubtful if any credit should be given to the drug. With regard to arsenic, this was for many years the sheet anchor in the treatment of chorea, and certainly good results followed its use in many cases. Of late there has been a reaction against its employment, one great objection being that the condition is liable to recur as soon as it is discontinued. Small doses of arsenic are useless, and the general opinion is that large doses, worked up to gradually, are necessary. During the last three or four years he has relied on acetyl-salicylic acid and has come to regard it as the drug par excellence for the treatment of chorea; up to the present it has not failed to effect a cure. Wall speaks highly of the drug, and Burnet has had very favorable results in his practise. This drug was originally introduced as an antirheumatic remedy, but its usefulness is not limited to those cases of chorea with a rheumatic history; after salicylate of sodium has failed, acetyl-salicylic acid may prove of benefit. Acetyl-salicylic acid may be given in powders, in cachets, or in a mixture, a moderate dose being five grains several times daily. It is a most useful drug, pleasant to take, comparatively free from unpleasant symptoms, and reliable in its results.

Drug Administration: In the *New York Medical Journal* for January 29, William Brady considers the administration of drugs with regard to absorption and elimination. A practical knowledge of these points is a requisite of successful therapy. It is of equal importance to know whether a dose is best given before a meal, at the end of a meal, or one or two hours after a meal; to exercise good judgment in selecting the best form; and the most effectual manner in which to prescribe the drug. No small share of this therapeutic carelessness is attributable to the abuse of the modern compressed tablets turned out by the commercial houses. Sodium salicylate particularly, which is so widely employed in tablet form, will unquestionably be found to be more acceptable to the stomach and more certain to be absorbed when administered dissolved in an aromatic water or simple elixir. Phenyl salicylate (salol) tablets are therapeutically wrong. So insoluble is the drug in tablet form that it frequently may be found in the stools, none the worse for the journey through the gastro-intestinal tract. It should invariably be exhibited in capsules or powder, and from one to three hours after meals, in order that it may pass directly to the duodenum, where it is decomposed and absorbed. Quinin is another drug very commonly and improperly dispensed in hard-coated compressed tablets. Bismuth tablets, with which the drug manufacturers' catalogs are heavily burdened, are inexcusable. Nitroglycerin acts in three minutes by mouth and its action continues for about 45 minutes: it is never necessary to give it hypodermically if the mouth can be opened. Sodium or potassium nitrite is absorbed in about eight minutes from the stomach, and is eliminated in three hours: it produces much less throbbing in the head than does nitroglycerin and, unlike the latter, is very stable, hence it may be well given in tablet triturates if desired. Ammonium salts exert their influence for about three hours, and should be given accordingly, not three times a day. Cocain systemically requires to be repeated every two hours to maintain its effect. Aconite in tincture, given by mouth, shows its effect in 15 minutes and is completely eliminated within three hours: doses every three hours are therefore indicated. Atropin acts in half an hour, and is eliminated within two hours: in children we should give increasing doses every two hours throughout the day, until the physiologic effect is reached, namely, redness of the cheeks appearing half an hour after the dose and lasting half an hour or longer, so that the mother thinks the child has fever. In adults it must be pushed to slight dryness of the throat. Digitalis is very slowly absorbed and very slowly eliminated, and we should prescribe only the physiologically tested products. For emergency purposes digitalis is quite useless, the so-called cumulative action resulting from crowding doses so frequently that there is not time for their complete elimination. To obtain the full benefit of the administration of drugs in disease it is quite as necessary to know the frequency as the quantity of dosage; possession of such knowledge renders the physician more self-confident in his management of the sick.

Opium in the Young: Abraham Jacobi in *Therapeutic Medicine* for January calls attention to the usefulness of proper doses of opium both in young and advanced children. The warnings against "opium in children" have behaved like inherited diseases: there was no end of them. One little or big author copied from his predecessor: even as great a man as Kobert joins the ranks of those who assert that "experience has proved the frequent danger which attends the use of opium in patients of early age." The action of a proper dose of opium, according to Schoepf Merei, is manifested half an hour after its administration, and lasts from three to six hours. He has seen cases of narcotism produced by the administration of opium, and even two cases of death: but a moderate degree of narcotic action he has never seen to be dangerous in cases in which the use of opium had been distinctly indicated. Jacobi has always claimed that whenever a medicine is really indicated, it is tolerated in fairly large, even quite large, doses In most cases the doses he has prescribed, he finds to exhaust their effect after two or three hours, while Schoepf Merei's intervals amount to three or six hours. Large doses of opium were introduced into the treatment of peritonitis by Alonzo Clark, in that of children by G. T. Elliot more than 50 years ago: but other maladies also may or do require big doses. Jacobi's favorable experience with the action of opium in the diseases of children and infants, and his anxiety that it should be utilized for its effects not attainable by other medicaments, have caused him to advocate its use in books and magazines, and in his lectures, for more than 40 years, but apparently with little or no result. In most fevers, on account of their causing the blood-vessels to dilate, and of the tendency of infants to convulsions, opium should not, as a rule, be used except in peritonitis, and occasionally to produce rest in pneumonia. Its greatly stimulating effect make it a welcome remedy in the myocardial affections following influenza, diphtheria, and other infectious diseases, and in which misled physicians have too often overworked and overthrown the incompetent fibers through the dangerous overexcitation produced by strychnin. A child of five years thus affected will readily and profitably take four daily doses of codein 1-20 or 1-16 of a grain, more or less, through an indefinite period. Many a case of chorea, mainly such as are connected with endocarditis, will bear and require codein in a similar way, with absolute rest and the internal use of arsenic; spasmodic conditions of other sorts will require opiates. Catarrhal diarrhea, follicular enteritis, and dysentery indicate opium. A baby of one year or less requires an average dose of 1-30 grain of opium as a part of its medication, once every two hours, and this dose may be taken a long time. No iron-clad rule can determine the exact dose of an opiate: with a little care, it may be selected and remain safe. He is quite sure that in his practise of over 56 years, during which he has treated thousands of cases of enteritis of different kinds, he has never destroyed an infant or child by an overdose of opium. The rules laid down in the textbooks referring to doses must be taken with many grains of salt.

Thyroid Medication: In the January number of *American Medicine,* Heinrich Stern says that while a decade or so ago, preparations of the thyroid gland were much in demand, within the last few years most physicians, at least in this country, have abandoned thyroid medication to a great extent. He thinks this due mainly to two reasons: (1) the supposed or actual impurity of the thyroid preparations on the market: and (2) the untoward effects which thyroid administration has called forth in a great number of patients. The first and most thorough setback which thyroid therapy has received was undoubtedly brought about by the indiscriminate use of the thyroid preparations in the treatment of obesity: in the wake of such use, and of self-treatment by patients, often occurred digestive disturbances, extreme nervousness, jactitation, general depression, and other more or less severe manifestations of intoxication. Aberrant effects, apart from impurity of the preparation used, may be due to (1), the dose in which the product is administered or (2), to the constitutional characteristics of the patient. The first eventuality is a very important factor in the production of untoward pneumonia. There are three concomitants of pathologic occurrence, viz., irregular heart action, glycosuria and albuminuria. If the dose of the thyroid extract be small enough, none of these manifestations may occur. Thyroid extract in doses large enough to effect body reduction is never a safe agent, and it is more prudent to prescribe at the outset very small doses of the drug when its administration is instituted. Heretofore thyroid therapy has found but limited employment, and for a number of years its use has been practically confined to the treatment of obesity, myxedema, cretinism and related conditions, although it has an active beneficial effect upon a variety of other pathologic affections and states. As to deleterious effects of thyroid medication, Stern first observed about 15 years ago that arsenic exerts a specific influence upon the activity of thyroid. Patients who took an arsenical and a thyroid preparation at the same time never complained of untoward symptoms, while in those treated with thyroid preparations alone such symptoms were occasionally exhibited. He never prescribes thyroid without adding arsenic in some form, and his observations have been confirmed by others. Instead of arsenious acid he has for some time used dimethyl arsenic acid (cacodylic acid) as a modifier of thyroid action. When thyroid medication is to be continued for protracted periods he adds a cardiac stimulant to the thyroid-arsenic combination, and further he prefers adonidin, although as it is very costly, caffein may be substituted in 1-6 grain doses.

Spinal Anesthesia: The *Monthly Cyclopedia and Medical Bulletin* for January, in an editorial, comments on Jennesco's recent demonstration of spinal anesthesia by means of stovain and strychnin. While it seems that stovain is absolutely safe in his hands, the number of high injections thus far made are not sufficient to give the method a high standard of safety, and just what position spinal anesthesia is to hold in the field of surgery in the future cannot at this time be foretold. The writer is still of the opinion that spinal anesthesia is dangerous, and especially the high injection method where the puncture is made between the first and second dorsal vertebrae. He believes too that the spinal canal should never be invaded for anesthesia unless no other resource is left to the surgeon. It is perfectly possible that any injection into the arachnoid space, no matter what the drug might be, may produce a disturbance of the trophic centers, and eventually do harm to the patient, while the possible results of infection should be considered. The *N. Y. Medical Journal* also condemns the method as a routine procedure, though perhaps useful under certain conditions.

Intestinal Hemorrhage: The *Therapeutic Gazette,* in the January number, has long felt that in the presence of intestinal hemorrhage, as in typhoid fever, the internal administration of drugs was futile, as there seems no good reason to suppose that such drugs will be any more efficacious under these circumstances, than they would be in a case of bleeding due to rupture of a varicose vein, or a severed dorsalis pedis artery: in most instances in which the hemorrhage stops after the use of such drugs, it has stopped solely because nature has plugged the bleeding vessel with a clot, and not through any action of the remedy. In the case of those drugs which are astringents, it is exceedingly doubtful if any of them reach the bleeding area, without first being destroyed or altered by the juices of the stomach or duodenum, and further, it is doubtful whether, when such a drug is taken by the mouth, it does not take so long a time to reach the bleeding area, that even if it remained unchanged in its nature, it would be impossible for it to do any good. In instances in which hemorrhage takes place from a portion of the bowel which can be reached by direct medication, as in bleeding from the rectal vessels, the use of ice or astringent injections or adrenalin in solution, or styptics, or caustics, of course may do good. The use of large doses of adrenalin causes a preliminary increase in hemorrhage, followed by a decrease or cessation of bleeding, and on account of the great preliminary loss of blood which it causes in large doses, such doses are always contraindicated. This increase in hemorrhage is probably due to the contraction of the blood-vessels in other portions of the body. Wiggers believes that small doses do not cause this preliminary increase, but distinctly diminish the total quantity of blood which is lost. The point is also emphasized that the administration of adrenalin by mouth, or even hypodermically, is futile. It must be given intravenously and continuously in weak solution for a long time to be advantageous. Its use here depends largely upon the condition of blood-pressure: if this be low it is the remedy of choice, while with a high tension the nitrites would be preferable. While theoretically the calcium salts would seem to be of value, practical experience indicates that they are generally useless. It is to be hoped that at some time in the near future some plan of treatment will be discovered which will meet this urgent and alarming therapeutic indication, but at present we must recognize that our power of doing much good in cases of intestinal hemorrhage is distinctly limited.

Cardiac Irritability: Beverly Robinson in the *American Journal of Clinical Medicine* contributes clinical notes on cardiac irritability, or cardiac neurasthenia, in which he has found by experience that some widely received statements are not wholly reliable, and also that there are exceptions to many accepted rules. To begin with, he fails to recognise in strychnin a remedy of much value in these cases. After giving this drug in moderate doses for days or weeks, the patient is not sensibly any stronger or better for its use. On the contrary it has increased manifest nervousness, produced wakefulness at night, and did not give greater strength to the heart beats or to the general system. The two tonics or cardiac stimulants which have the most immediate good effects are caffein and strophanthus. The former should be given as the citrate and the latter as the tincture, and both in tablet triturate, in which form they are less objectionable to the stomach. Digitalis in this form may often be used advantageously for a while after stomachal intolerance has subsided, scarcely ever before that. With palpitation, frequent heart-beats, somewhat irregular and feeble pulse oftentimes, and faintness and pallor coming on suddenly, with marked facial flushing, bad headache and even marked dizziness, nothing seems to relieve these symptoms so rapidly as caffein citrate in one-half to one grain doses, repeated in three hours or less. He formerly made use of cactus, and while he recommends it in some instances, it does not act as rapidly as caffein and should be reserved for patients in whom one wishes slower and more continuous effects. No local applications have much beneficial effects at times without the use of caffein internally. Any stomachal or intestinal intolerance is quieted and relieved permanently better with milk of bismuth, frequently repeated, than in any other way he knows. It is one of the best intestinal antiseptics, and not in the least injurious. The best of all nerve tonics in these cases is the glycerophosphate of lime and soda combined, in 5 to 10 grain doses, three or more times a day, and preferably taken after eating, even if eating very lightly. If any hypnotic is required (and they are all bad except as a makeshift) bromural is the least objectionable, in 5 or even 10 grain doses. It soothes the jaded nerves and gives quiet sleep for several hours. It is well to bear in mind that gentle massage treatment, especially of the lower limbs just before retiring, will often bring on restful slumber.

Enlarged Prostate: In the *Medical Council* for January, S. J. Ross reports that in the prostatic troubles of old men he has had uniformly good results and in some cases has been surprised as well as pleased at the benefits received, in the short time of from one week or more, by the use of chromium sulphate. In one case in which the patient, aged 73, had been obliged to adopt the catheter life for the six months preceding to obtain relief, four grain tablets of chromium sulphate were given four times a day after each meal and at bedtime, taken with a glassful of water. Considerable relief was obtained after one week of this treatment and the dose was then increased to eight grains three times a day, omitting the bedtime dose. Strychnin sulphate 1/130 grain before each meal was now added to the treatment, and improvement was rapid from this time on. The catheter was laid aside within a space of two weeks, much to the relief of the patient. The remedy was continued for three months, the strychnin being dropped at the end of the first month. The prostate was now nearly normal in size, there was no tenderness, and sleep was undisturbed, the patient having to arise only once to urinate. Ross has had no further experience, but believes the drug of great value in prostatic troubles.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph.G., Ph.D.

Rhus Poison: Résumé of the theories as to the toxic action of various species of Rhus (poison ivy, etc.). Up to 1894 the opinion prevailed that the poison was volatile, but Pfaff's researches proved it to be an oil-like substance, *toxicodendrol,* 1/1000 milligram of this body producing the characteristic physiological effect. Poisoning without direct contact was explained by the presence of toxicodendrol in the pollen or in the plant-hairs and by these being conveyed to the person by the wind. The degree of susceptibility seems to depend on the delicacy of the skin, real immunity seeming to be lacking. There appears no specific remedy for the poison (L. E .Warren, *Pharmaceutical Journal,* through *Chemical Abstracts, 4,* 217).

Value of Pharmaceutical Extracts: E. Boulanger-Dausse (*Bull. Sci. pharmacology,* through *Chemical Abstracts, 4,* 233) cites extreme complexity and fragile constituents of such drugs as kola, digitalis, ergot, etc., as evidence of the fact that in adopting the pharmacologist's results upon the action of the constituents supposed to be representative of the drug, we are apt to be misled. Use of the extract of the drug is frequently preferable.

Bactericidal Toxin from Yeast: Yeast, when macerated with hydrochloric acid (1-1000), is said, by A. Fernbach (*Pharm. Journal,* through *Pacific Pharmacist, 3,* 396) to yield an extract from which can be removed a toxin which is an extremely active bactericide toward

Bacillus coli communis and *Staphylococcus aureus.* While volatilizable in steam under reduced pressure at 40° C., it is destroyed on heating to 100° C.

Tannin-Free Syrup of Wild Cherry: J. C. Umney (through *National Druggist, 40,* 75) calls attention to the fact that the tannin in wild cherry bark (hence in Syrup of Wild Cherry of the British Pharmacopoeia) is apt to precipitate such alkaloids as codein and heroin, so frequently prescribed with the syrup in cough mixtures. The recipe of the present United States Pharmacopoeia tries to lessen the tannin content of the syrup by percolating wild cherry bark with water and adding glycerin to the aqueous percolate.

Sterilization of Extract of Opium: While this extract, when sterilized in an autoclave at 112° C. or in a current of vapor at 110° C. deposits resinous matter, Candussio (*Jour. suisse Chem. et Pharm.,* through *National Druggist, 40,* 78) finds this resin inert and the morphin strength of the extract unimpaired. He therefore suggests sterilization of the extract first and filling of ampoules with the resin-free extract.

Preserving Lard: Van Noren (*Annales de Pharmacie,* through *National Druggist, 40,* 78) reports keeping lard for two years without the slightest deterioration by mixing 1000 grams lard with 40 grams powdered benzoin and 30 grams powdered potassa alum, letting stand 24 hours then warming the mixture on a water bath for six hours, keeping the dish well covered. The lard is then melted and filtered through paper.

Dende Root: This is the root of a small tree growing in Sierra Leone and belonging to the Simarubaceae and presumably Brucea macrophylla. It is used by the natives for malaria. H. Finnemore (*Pharm. Journal,* through *National Druggist, 40,* 75) on examination of the root finds it yields a crystalline principle melting at 219° to 224° C.

Ferrous Carbonate Preparations: B. O. Leubner discusses the official ferrous carbonate preparations in *Merck's Report, 19,* 31. After describing methods of, and suggesting improvements in the assay, he reports that pills of ferrous carbonate, even those 15 years old, were found in excellent condition. He found, however, that the ferrous carbonate strength of the manufactured pills varied greatly, ranging from 6% to 32% ferrous carbonate, while the official pills should contain approximately 20% ferrous carbonate. The five samples of commercial tablets assayed were all deficient, running from 7% to 13.9% instead of the official strength (20%).

Modern Hair Dyes: *The Pharmaceutical Journal* (through *Merck's Report, 19,* 42) describes the use of paraphenylene diamine in modern hair dyes (e. g. "Mrs. Potter's Walnut Juice Hair Stain," "Juvenil," "Juvenia," "Fo," etc.). The article gives methods of chemical analysis of this class of preparations as well as the line of "two-bottle hair dyes" which consist of a blue liquid (copper or nickel sulphate with ammonia water) and a brown liquid (aqueous solution of pyrogallic acid). The danger of the use of these chemicals, because of the eruption they cause on the scalp and face, is emphasized.

Organic Sulphur Compounds: A comparative test of the many preparations of this character made by E. F. Passmore (*Chemist and Druggist,* through *Merck's Report, 19,* 40), shows that the only product approaching the original ichthyol is "petrosulfol."

Academy of Medicine of Cleveland.

MEDICOLEGAL SECTION.

The fourth regular meeting was held at the Cleveland Medical Library, Friday, January 27, 1910, Judge Alexander Hadden in the chair.

The program was as follows:

1. The Traumatic Neuroses from the Medical Point of View, Archibald Church, Chicago. (To appear in full in the Journal.)

2. The Traumatic Neuroses from the Legal Point of View, Glenn A. Boone, LL. B. (appearing in full on page 177).

W. C. Boyle, in the discussion, said that he watched with a great deal of interest this development of the history of traumatic neurosis, because he realized what a great part is played in damage suits. He had been connected with such suits for the last 20 years and he could frankly say from his experience that in the majority of cases there was more fraud than reality. At one time hysteria was looked upon as simply a feigned disease. He remembered the first discussion upon this point between two lawyers and two doctors whom he had taken to Crestline in a railroad case. Action had been brought against the Pennsylvania Railroad for damages by a man who had fallen in the shops and claimed damage. He had gone, on one occasion, to this man's home and was detained for some 15 or 20 minutes before being admitted; then he found the man lying on the sofa with his leg all swollen and there was evidence of a constricting bandage having been placed around it. Two physicians from this city were directly opposed, in this case, as to whether there was injury or not, and for the first time the question was raised as to whether hysteria was voluntary or not. Upon the advice of one of these doctors the case was settled, but within two weeks the man was out and around and, among other things, jumped over an eight-rail fence. In eight cases out of ten this had been his experience. It had been definitely determined by the doctors that hysteria was a disease and that it was a serious disease. The question was how it could be combatted. He could see that litigation would be increased because it was easy to assume the existence of something when doctors could not determine as to whether or not it actually did exist. When it was considered that hysteria was, in fact, the controlling of the symptoms of the body by a false idea, no matter how much of an injury there might be, whether small or large, if there were a desire or suggestion on the part of the patient to get money out of the railroad company the false ideas could center in the mind and if the patient were able to carry them out the doctors might be deceived. What was the result? Payment was made not for the injury but for the false idea, and to the extent that the false idea was carried out. In an interesting case in Youngstown, a man sued the railroad company, claiming damages for an injury which he claimed caused him to continually jerk his head back. He continued this jerking for two years, during which time he was watched many times. For some reason he lost his suit and the shock of not getting a verdict was such that he never jerked his head after leaving the court room.

He had the greatest sympathy for any person with neurasthenia, with its marked symptoms which were genuine and not simulated, and when such a case came to court he did not haggle over the price. But when persons who were normal sued for damages they would get no money unless they could show him the reality of their disability. It was up to the doctors to determine in some definite way what was hysteria and when it was simulated and when not; it was to the interest of both the doctors and lawyers to see that these fraudulent cases were kept out of court. It might be a very difficult thing but as the medical profession grew in knowledge it might reach that point, and he did not think there was any branch of the profession in which greater good to the people could be done than in that. In another case in Youngstown the plaintiff had gone around to different nerve specialists until he knew well the symptoms he should show. Within two weeks after the case was ended this client who had been such a nervous wreck was apparently in perfect physical condition. There were, therefore, two sides to this question, the side which was true and the side which was not.

R. E. Ruedy said that it was but natural that the attorney who came in contact with, and was most deeply impressed with, cases of a debatable character in which a money consideration was at stake and which went on to trial, should be inclined to be skeptical of all who alleged traumatic neurasthenia. On the other hand, to the physician this class of cases formed but the smaller part of the neurasthenics whom he saw. The remaining and greater part was that in which the element of money compensation did not enter, but which nevertheless presented the same varied symptoms and the same persistence. Therefore the physician was more inclined to believe the story of the subjective symptoms of the traumatic neurasthenic, especially if he were able to find even one or two objective evidences to corroborate it. One was not entitled to draw general conclusions from a too limited number of cases, especially when those cases did not represent fairly the condition in question.

The following officers were elected for the ensuing year: Chairman, C. H. Clark; Vice-Chairman, D. C. Westenhaver; Secretary, B. A. Gage; Counselor, T. A. Burke.

THE OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION.

The forty-fourth regular meeting was held Friday, January 28, 1910, at the Cleveland Medical Library, E. Lauder in the chair.

The program was as follows:

The Diagnosis and Treatment of Suppurative Diseases of the Labyrinth, Heinrich Neuman, Privat Docent, University of Vienna.

This address was delivered in German and the subject was discussed in detail in a clear, concise and most careful manner and in a way which should not fail to impress the specialist or the practitioner with the importance of this difficult and frequently neglected subject. The dangers lurking in the train of a chronic discharge from the middle ear, as well as the necessity of placing those so affected in the hands of men fitted by special training for work in this difficult field were points especially mentioned. The subject had been carefully thought out and systematized before delivery, thus avoiding the necessity of either notes or manuscript. Although laboring under the necessity of addressing a strange audience in a foreign tongue the speaker was so fortunate in his choice of words and construction of sentences that even one whose knowledge of German was slight could follow the entire address with little or no difficulty.

CLINICAL AND PATHOLOGICAL SECTION.

The sixty-sixth regular meeting was held at the Cleveland Medical Library, Friday, February 4, 1910, J. S. Tierney in the chair.

J. P. Sawyer presented a patient, a man of average weight, 43 years old, who under the influence of prolonged nervous strain, had marked gastralgia and absence of free HCl secretion in the gastric juice, as was shown by numerous analyses of test-meals. In connection with vomiting and loss of weight the condition so closely simulated malignancy that operation had been recommended by several physicians.

A different diagnosis in the face of the phenomena noted was based upon absence of tumor in a case whose symptoms had lasted six months, upon the presence of pepsin and milk-curdling ferment and upon differential blood counts, in this case the lymphocytes being 58% and polymorphonuclears but 42%.

After a period of complete mental and bodily rest and with a modified Leube cure the pain and vomiting disappeared and free HCl reappeared in the gastric secretion with a gain of 15 pounds in weight.

Thus as a result of severe nerve strain not only may there be a total absence of free HCl from the gastric juice for long periods but other associated conditions might also be noted, such, for example, as a departure from the normal in the differential leukocyte count.

John Phillips presented a man, 50 years of age, who had a very large aneurysm of the ascending arch of the aorta. He had had a syphilitic infection six years previously. One year ago he began to complain of pain to the right of the sternum over the second and third costal cartilages; it was noticed that there was slight pulsation in this area; and a definite diastolic shock could be felt. Two months later a slight bulging of the costal cartilages could be made out. His pain at this time was very severe and had continued so until the present time. For the past three months he had a cough which was "brassy" in character and was quite troublesome, and there had been shortness of breath. He now had a large pulsating tumor mass, which projected eight cm. above the surface of the chest, and whose base extended vertically from the second to the seventh rib, and laterally from the right margin of the sternum to the anterior axillary line, the apex of the tumor being opposite the fourth rib in the midclavicular line. Over the tumor a distinct diastolic shock could be made out. The left border of the heart was just outside the nipple line. The radial pulse on the right side was slightly smaller than the left. The speaker also showed a photograph of another patient whom he had under observation, with a very large aneurysm involving the ascending arch of the aorta and the innominate artery.

The program was as follows:

1. Spinal Anesthesia, M. E. Blahd. (To appear in full in the Journal.)

2. The Hydrostatic Dilator in Obstetrics, A. J. Skeel. (Appearing in full on page 161.)

J. J. Thomas, in the discussion, endorsed the use of the bags which were often of great value. It was advisable before introducing the bag to see just how much water was required to fill it, otherwise it was difficult, after it was inserted, to tell when it was full. The Pomeroy bag was very useful in primiparae since it was really a double bag possessing two chambers, each with a separate tube: the one bag was placed in the cervix, the other in the vagina which it served to dilate simultaneously with the dilatation of the cervix. The colpeurynter, by delaying early rupture of the membranes, was of decided advantage in primiparae.

E. O. Houck said that he had found bags specially useful in inducing premature labor since they conserved the strength of the patient and lessened the dangers to the child.

A. J. Skeel, in conclusion, said that his employment of the bags was steadily increasing and that he was finding a wider application for them and securing improved results. Very recently he had had a very good result from them in a case of central placenta praevia in which the mother and child had been saved.

3. Observations on the Coagulation Time of the Blood in a Case of Phlegmasia Alba Dolens, and its Treatment, P. A. Jacobs. (To appear in full in the Journal.)

EXPERIMENTAL MEDICINE SECTION.

The forty-eighth regular meeting was held at the Cleveland Medical Library, Friday, February 11, 1910, C. F. Hoover in the chair.

The program was as follows:

1. Pigment Formation by the Chromatophores of the Skin, Oscar T. Schultz.

The result of a study upon the formation of pigment by the chromatophores of the skin was reported. The material, derived from a case of mycosis fungoides through the courtesy of Dr W. T. Corlett, was very fortunate in that the increased growth and multiplication rates, over what occurs in normal skin, made early stages in the development of the cells easily found, and there was not the association of the disturbing factors which occur in tumors derived from pigment cells. The skin of the patient from which the material came was almost universally of a deep brown color. Microscopic examination showed the discoloration to be due to the large number of pigment cells present in the subepidermal tissues.

In addition to the adult cells, loaded with brown pigment, earlier stages of development were present. The earliest stage was an irregularly polyhedral cell, not to be distinguished from other young mesodermal cells present. There soon occurred differentiation, marked by changes in form and in cytoplasmic structure. The cell became elongated, spindle shaped, with the general form of a fibroblast. The nucleus, however, was less flattened and broader in diameter. More important was the staining reaction of the cytoplasm. In eosin methylene-blue preparations the cell body had a bluish tinge, due to the presence of very minute granules of chromatin; often these granules produced a fine alveolar network. Because of the changes which later occurred in the cytoplasm and which led to the formation of the products distinctive of the cell under consideration this extranuclear chromatic material must be considered a chromidial apparatus in the sense of Goldschmidt. Cells with blue stained cytoplasm might already show the beginning of the branching which became so marked in the adult cell. With the passage of chromatin into the cytoplasm the nucleus did not decrease in stainability, indicating that chromatin formation upon the part of the nucleus still continued. In the next stage the cell was more elongated and the cytoplasm took a violet tinge. This color was due to the presence of chromatin granules and of granules, larger but of varying size, which took an intense eosin stain. Brown pigment now began to make its appearance, and granules were seen showing all gradations of color from a pure red to a deep brown. The nucleus was very rich in chromatin and the finer structure of the cytoplasm was hidden by the various kinds of granules present. The cell was now at the height of its activity and looked much like a very active gland cell. This similarity was further borne out by the actual extrusion of pigment granules. There followed a stage in which the cell form was more that of the adult cell. The cytoplasm had lost its violet color, due to the disappearance of chromatin staining granules. Eosin stained granules were still present in large numbers and the number of pigment granules was increased. The nucleus was more vesicular than in the preceding stage. The activity of the nucleus had passed its maximum, while the transformation of materials into pigments was increasing. Later the red granules disappeared almost completely, being replaced by brown pigment granules; the nucleus was still vesicular. Finally, the nucleus became shrunken and condensed, irregularly lobulated, and so deeply stained that no finer details of structure could be made out. The nucleus was a typical senile one. The cytoplasm, closely packed with brown pigment granules, showed the multiple branching characteristic of the chromatophore.

The changes noted were to be interpreted as a definite succession of events in which the nucleus played an important part in the physiological activity of a specialized type of cell. From the nucleus chromatin was given off to the cytoplasm. This material had functional value and was a chromidial apparatus. Hertwig had shown that perhaps the most important rôle of nucleolar substance was the organization of chromatin. This was apparent in the changes which occurred in the cytoplasm after the material was extruded from the nucleus. The basic staining property disappeared, the granules became fused to form larger ones which took the deep acid stain of nucleolar substance. The material was still further changed, producing pigment. In this ultimate transformation of nuclear derivatives into pigment specialized activity upon the part of the cytoplasm or in the metabolism of the cell probably played a part. Essential for pigment formation, however, was the participation of the nucleus in the activity of the cell through the elaboration of nuclear materials from which the pigment was directly derived.

W. T. Howard, in the discussion, said that the series of changes described by the speaker appeared logical and he felt convinced that the interpretation given was correct. The same chain of processes could be observed in the chromatophores as were seen in gland cells forming secretion from chromatic material, for instance the formation by the cells of the pancreas of zymogen and prozymogen granules, which in turn were used up in the formation of the secretion by some process, the exact nature of which was as yet unsettled. The disappearance of the chromatin and its transmutation into pigment had been clearly demonstrated. In *Actinosphaerium* chromatin was extruded from the cell but a certain amount was changed into pigment within the cell; the cytoplasm did not necessarily do this as the manufacture of pigment could apparently occur in the nucleus.

J. J. R. Macleod asked whether, granting the hypothesis that pigment was formed from chromatin, this was true in the case of all pigments elaborated in the tissues for physiological purposes?

O. T. Schultz, in conclusion, said that he was not prepared to say that all pigments were formed in this way. The chromatophore was not an ordinary connective-tissue cell but had a specialized function, that of forming pigment.

2. Observations and Experiments on the So-Called Carcinoma of the Fish Thyroid and its Relation to Ordinary Goiter, D. Marine and C. H. Lenhart. (To appear in the *Journal of Experimental Medicine.*)

This disease is characterized by an excessive and abnormal growth of thyroid tissue leading to the formation of visible external tumors. Owing to the recent great development of fish culture, both of public and private enterprise, and the artificial rearing of great numbers of game fish, especially the trout and salmon, the disease has acquired great economic importance.

The scientific interest is at present concerned with the biological nature of the process which up to the present time has been considered carcinoma. This opinion was the result purely of anatomical studies which the speakers thought were insufficient for an unqualified diagnosis of cancer of the thyroid, inasmuch as their extensive experience with disease processes in this gland had convinced them that accurate diagnosis by histological methods alone were difficult. Accordingly the authors supplemented their histological observations with clinical observations and experiments the results of which were briefly as follows:

In studying the arrangements of the retaining ponds in which over 70,000 trout, varying from eight months to three years old, were held, they observed that the water supply in general was small but that the lower ponds of the series received additional supplies of water, so that the upper 20 ponds received approximately only one-third the amount of water that the lower 15 ponds received.

They observed that the incidence of visible tumors was much greater in the ponds with the smaller water supply, in fish of the same age, and that the incidence of visible tumors gradually increased as the water was repeatedly used. The authors then collected specimens of fish from all the ponds in series, together with specimens taken from the brook above and below all the ponds, and upon histological examination the same phenomena were observed, viz.: that the severity of the thyroid changes was directly related to the reduced water supply and its repeated use. The most important observation from this series of histological examinations was that the trout living wild in the stream above all ponds, and those living wild below all ponds in the tail race, had normal thyroids. These observations the authors interpreted as indicating a very close relationship between the amount of water, its pollution by overcrowding and overfeeding the fish, and the severity of the thyroid changes. Experiments with the administration of iodin and of fresh ox thyroid to these affected fish showed that the active hyperplasia reacted alike with both the above named substances and also that this reaction was exactly the same as occurred in mammalian hyperplasias (goiters), viz.: the return of the hyperplasia to the colloid or resting state. This observation convinced the authors that this disease was not cancer inasmuch as they had never been able to induce this reaction with any true thyroid tumor in mammals. They, therefore, believe that iodin is a physiological test for cancer of the thyroid and that any thyroid hyperplasia that reacts with iodin-containing substances is not cancer.

The authors reported a series of inoculation experiments with negative results but expressed the opinion that these negative results rather indicated our ignorance of the physiological requirements to be met than that the tissue could not be transplanted.

It was explained that the normal fish thyroid is composed of widely scattered follicles which normally may be imbedded in bone or muscle. They pointed out that it was due to the lack of proper appreciation of the fact that the fish thyroid had no capsule that many writers were led to diagnose the hyperplasia as cancer.

Summing up, the authors pointed out that in view of the fact that the disease affects the younger more than the older fish; that the disease is definitely influenced by the amount of water passing through the ponds; that fish tend toward, and do undergo spontaneous recovery if taken from their crowded quarters and left to care for themselves in the open stream; and that iodin or ox thyroid effects a cure, they could not accept the prevailing opinion that the disease is cancerous in nature but believe that the disease is only an extreme illustration of endemic goiter.

J. J. R. Macleod asked when the thyroid proliferation began in these fish? How quickly did the tumors grow, and how quickly did they resolve in a suitable environment? He also inquired as to the nucleus-plasma relationship during the growth and retrogression of the thyroid cells in these fish.

O. T. Schultz, W. T. Howard, M. Coplan and J. E. Tuckerman also took part in the discussion.

D. Marine, in conclusion, said the proliferation began as soon as the fish were transferred to the ponds, which was done when they were three or four months old. As a rule, the younger the fish the more rapidly the thyroid grew and likewise the more rapidly did the growths react to iodin or favorable change in environment. When using iodin on two-year-old fish the process of reversion was complete in 20 to 30 days. In spontaneous recovery the process was doubtless slower but they had no exact data as to the time, save that reversion was complete in four to five months. As to the rapidity of tumor development this depended on age and environment. Visible tumors might be present in fish seven months old showing, therefore, a very rapid growth of thyroid tissue. The nucleus-plasma relation was markedly disturbed in those cases that had maintained active thyroid hyperplasia for prolonged periods of time without any intervening periods of physiological rest, just as occurred in mammals. The characteristics of this change had just been referred to by W. T. Howard and O. T. Schultz.

ACADEMY MEETING.

The seventy-third meeting was held at the Cleveland Medical Library, Friday, February 18, 1910, the Vice-President, F. C. Taylor, in the chair.

The following report of a meeting of the Council was made by the Secretary:

The Council of the Academy of Medicine of Cleveland met Wednesday, February 2, 1910.

The following were elected to active membership: Andrew R. Warner, Richard Dexter, S. Baumoel, C. Orville Wetter, Henry Jenkins. To non-resident membership: Harlan Dudley, Macedonia, O. To associate membership: Glen A. Boone, A. G. Newcomb, E. R. Freeman, attorneys.

The following names of applicants were ordered published. For active membership: Albert M. Dunlap, George A. Allison, R. M. Manley, Chas. E. Richards. For associate membership: Willis T. White, attorney.

A communication from Mr. John H. Chase, head worker at the Goodrich Social Settlement, regarding vasectomy was read. It was voted that a committee be appointed to confer with Mr. Chase upon this matter.

The committee to make recommendations for amendments to the Constitution reported. After a long discussion it was decided that the report be referred back to the committee for further consideration.

The program was as follows:

1. Carbon Monoxid Poisoning, Martin Friedrich. (To appear in full in the Journal.)

J. J. Thomas, in the discussion, referred to a family of 10 all of whom had symptoms of carbon monoxid poisoning. Headache and other symptoms began as soon as small gas stoves, not connected by pipes with the chimneys, had been installed in each room of the house in place of a furnace in the basement which had formerly been used. He had noticed a number of instances of chronic poisoning when gas burners had been placed in the ordinary hot air registers.

S. L. Bernstein asked the speaker whether the use of natural gas in the ordinary hot air furnace usually heated by coal was not attended with some danger owing to the escape of the gas fumes. He had noticed sugestive symptoms in some families when this change had been made in the heating apparatus.

J. G. Spenzer said that the red blood corpuscles were destroyed only in the chronic poisoning and not in the acute type. Carbon monoxid, if present in a proportion of but .02% of the atmosphere, could be breathed for a long period without harm. .07% was injurious and .2% was distinctly poisonous. Gun practise in the navy was attended with some danger owing to the large amount of CO evolved from the exploding of the smokeless powder. Artificial illuminating gas contained from 12 to 30% of CO, while the water gas contained as high as 40%. Death could take place very rapidly in CO poisoning. It often required prolonged efforts to resuscitate those overcome with this gas. There was a distinct mawkish taste to carbon monoxid which was easily recognizable. Since the union of CO and hemoglobin was very stable, the introduction of new blood by transfusion seemed a most rational treatment.

G. E. Follansbee said that the damper in the stovepipe of gas stoves was a great menace, people would persist in closing it to economize heat, even when warned of the danger. He had seen a great many cases of CO poisoning at the blast furnaces. In many of these death occurred very suddenly. Formerly he had had to superintend the resuscitation of many of these cases but since he had provided oxygen tanks with suitable mouthpieces, which could be employed at once by the men themselves, they had all recovered before he arrived with the exception of those who were already dead. He wished to ask if by the time respiration had actually ceased all hope of recovery was gone.

M. Friedrich, in conclusion, said that no city or state law existed which could compel stove manufacturers to provide gas stoves with proper flues. If gas was installed in coal furnaces it was highly important to see that the flues and chimneys were cleared of soot so that ample ventilation was provided. He had seen no cases revived after the cessation of respiration, probably by this time the blood was saturated with CO and even if oxygen was forced into the lungs it could get no farther. In acute poisoning, of course, there would not be time for the destruction of the corpuscles which occurred in the chronic cases.

2. Clinical Observations on Transfusion, H. G. Sloan. (To appear in full in the Journal.)

G. W. Crile, in the discussion, said that the phenomenon of acute dilatation of the heart during transfusion was extremely important and should always be watched for, since, if it occurred and was overlooked, serious results would follow. In any case of acute dilatation he would strongly recommend grasping the chest and producing rhythmic contraction, by this means blood could be forced out of the heart and owing to the valves the direction of the current must be normal. By such means a great deal of good could be accomplished in acute cardiac dilatation from whatever cause.

H. G. Sloan, in conclusion, said that it had been their practise when it was considered probable that a given case would require transfusion, to give small doses of digitalis for several hours prior to transfusion. Since doing this they had not noted any cardiac dilatation; the procedure, therefore, seemed a wise one if time would permit its employment.

3. Stokes-Adams Disease. Demonstration of Kraus' Sphygmomanometer and Polygraph, M. J. Lichty. (To appear in full in the Journal.)

Book Reviews.

A Textbook of the Practise of Medicine. By James M. Anders, M. D., Ph. D., LL. D., Professor of the Theory and Practise of Medicine and of Clinical Medicine, Medico-Chirurgical College, Philadelphia. Ninth revised edition. Octavo of 1,326 pages, fully illustrated. Philadelphia and London: W. B. Saunder Company, 1909. Cloth, $5.50 net; half morocco, $7.00 net.

It is now 12 years since Anders' Practise of Medicine was first published. To pass through nine editions, besides being reprinted on several occasions, shows conclusively that it has been given a hearty reception by the medical profession. The present edition is the product of a very careful and thorough revision of its predecessor. We find that it contains all of the recent important additions to clinical medicine. This has not increased the size of the book, because much obsolete matter has been eliminated. It is a pleasure indeed to note how thoroughly abreast of the times is this volume. We find within its pages references to treatment such as the use of Flexner's serum in cerebrospinal meningitis, Tucker's magnesium sulphate treatment of erysipelas, cholesterin administration in pernicious anemia, and a discussion of myatonia congenita of Oppenheim. It is disappointing, however, to find no reference to the diagnostic value of lymphocytosis in whooping-cough.

A great deal of attention is given to differential diagnosis and many carefully prepared diagnostic tables are found scattered through the work. Such tables are very helpful to the student if he does not fail to remember that there are many exceptions to most rules in medicine.

The chapters on therapeutics contain numerous formulae which the author, from his extensive experience, has found valuable. It is probably this feature, more than any other, that has served to make the book popular. In some conditions the author goes to the extreme of advising many drugs without emphasizing the value of simple hygienic measures: thus in the treatment of tympanites in typhoid he advises the use of salol, acetozone, eserin and other drugs but does not lay stress upon the great importance of stopping all food even for several days if necessary. The section on nervous diseases has been revised by C. S. Potts. It compares favorably with the other portions of the book.

We feel sure that this edition will meet with the same cordial reception by teachers, practitioners and students that was accorded to the previous ones, and we can heartily recommend it. J. P.

Outlines of Chemistry. A Textbook for College Students. By Louis Kahlenberg, Ph. D., Professor of Chemistry and Director of the Course in Chemistry in the University of Wisconsin. Price $2.60 net. The Macmillan Co., New York, 1909.

A somewhat careful examination of this new book has led us to the conclusion that it is by far the best textbook of inorganic chemistry for beginners that has appeared in recent years. The author intends it to represent one year's work of chemistry in college. The book seems a very suitable one for medical students as well as for others. The discussion of the various topics is clear and adapted to the student's comprehension.

We think that excellent judgment has been shown in the selection of the subject matter, and in the order of its arrangement. The discussion of the laws and theories of chemistry is not massed together in the first few chapters as in many other textbooks, but is distributed through the book, each theoretical point being considered where it fits in best, following the presentation of fundamental chemical facts which serve as a basis for it.

Considerable physical chemistry is scattered through the book, sufficient in amount for a good understanding of general chemistry. Prof. Kahlenberg's views on the subjects of ionization and osmotic pressure are, however, at variance with accepted ideas. We regret very much that the author has not realized the desirability of giving a great many structural formulas of inorganic compounds, but know of no textbook which is thoroughly satisfactory in this respect. While, for the most part, the properties of elements and compounds are given quite fully, there are, however, notable omissions in regard to the degree of solubility of a number of very important compounds.

The only criticism which we feel inclined to emphasize is that chapter XV seems inadequate and misleading. In the space of about 35 pages the author strives to give a survey of organic chemistry. We suspect that all wise teachers of chemistry in using the book will omit this chapter. The danger is that the student may imagine that he has acquired an understanding of organic chemistry, whereas, as a matter of fact, such a brief chapter does not and cannot give a real insight into that most difficult and extensive branch of chemistry. It would, doubtless, be much better to put into an appendix whatever information about organic compounds it seems to the author desirable to impart to his students in general chemistry. H. D. H.

Handbook of Modern Treatment and Medical Formulary. A Condensed and Comprehensive Manual of Practical Formulae and General Remedial Measures. By W. B. Campbell, M. D. Formerly Resident Physician at the Methodist Episcopal Hospital of Philadelphia. Octavo. Cloth, $2.50. F. A. Davis Company, Philadelphia, 1909.

This book of 483 pages contains a large amount of information, much of it valuable and suggestive, but, as is commonly to be found in compilations of this kind, also much of doubtful value. As a whole it would have more weight if the personal experience of the author were brought more to the fore—if less of the subject matter had been "gathered from the results obtained by medical men of wide and ripe experience;" especially as no references are given to the publications of these men. To a large extent it illustrates the crying need of the day for more original investigation and less browsing around among the work of others.

One of the chief criticisms is that there is too little explanation of the indications for the different prescriptions. For example, under "Uraemia" on page 450, caffein citrate is recommended to be used as a diuretic if the arterial tension is high, while the next prescription but one recommends nitroglycerin and camphor for the same purpose, a practically diametrically opposite therapy if the vasodilator effect of camphor is what is expected from the camphor. Aside from the question as to the grave danger which may be present of raising an already high blood-pressure with caffein, the physician must choose between the two prescriptions. If the author has special reasons for giving the one or the other, besides the presence of an increased blood-pressure, he should state them. In many other places the indications stated are altogether too meagre, the matter is made too empirical.

Another serious criticism is the use of such a great number of unnecessary prescriptions or the use of prescriptions containing several remedies when one or two remedies could be more easily regulated in dosage according to the changes in the course of the illness; would be simpler to prescribe and compound; often, and by no means an unimportant feature, would be less expensive to the patient; and, finally, many times at least would be as efficient if not more so. The 27 prescriptions given under "Whooping Cough" furnish a striking example of this, especially when the treatment here suggested is contrasted with the simplicity of treatment stated in E. F. Cushing's recent article in this Journal (November, 1909) in which he states that belladonna, antipyrin, and either heroin or opium have served him best as far as drugs are concerned. Experience has shown that if these few simple remedies do not help when properly used it is doubtful if what to the child must often be noxious messes will do any more.

In the arrangement of this book much is left to be desired. The lack of unity in many places amounts almost to incoherence. For example, on page 25 under "Anaesthesia," the subheading is "Local Anaesthesia," but on the next page, and still under this heading, the author lightly skips from local anesthesia to general, and finally back to local. "Spinal Anaesthesia" is the next subheading with some formulae for the use of camphor as a local anesthetic in itching interjected. Then comes another skip to the subheading of "A Simple Method of Producing Local Anaesthesia" followed by a hop back to "An Improved Method of Local Analgesia," why *analgesia* here instead of *anesthesia* as before not being stated. Again so many minor inaccuracies in spelling, what is practically repetition under different headings, and other objectionable features are present that it is impossible to discuss them all in detail.

Finally, and perhaps the most serious criticism of all of a compilation of this kind, is its tendency to keep physicians who use it from thinking. There is no royal road to proper prescription writing: it must come through thorough knowledge of the individual drugs, their properties, and their proper combination, and, above all, as thorough comprehension as possible of the factors entering into any given case. Until there is an increase in the number of truly specific remedies the physician must depend more on himself, and less on the prescriptions of somebody else or the multicolored "shotgun" tablets and elixirs of the "detail man." In short, while this book has many good features, the many poor ones, both unnecessary and those for which, as a mirror of the times, it is only indirectly responsible, leave much to be desired. F. W. H.

The Body at Work. A Treatise on the Principles of Physiology. By Alex. Hill, M. A., M. D., F. R. C. S. Sometime Master of Downing College, Cambridge. With 46 illustrations. Edward Arnold, London. 1908. Longmans, Green and Co., New York.

In this book the author has "endeavored to describe the phenomena of life, and the principal conclusions which have been drawn as to their interdependence and as to their causes, in language which will be understood by persons unacquainted with the sciences upon which physiology is based" (physics, chemistry, biology). The book is an attempt at a popular exposition of the science of physiology. References to experimental methods and to technic are omitted. The trend of modern thought toward problems yet unsolved is indicated.

The book appeals to the reviewer as very well fulfilling the purpose for which it was written. It is elementary in its language. Interest is maintained by occasional allusions to questions of practical medical import.

Frequent references to comparative anatomy and embryology simplify the explanation of complex structure and function. The space allotted to the various divisions of physiology is well proportioned, and the subjects most exhaustively treated are, in general, those which a lay reader would best understand and which present the most stable side of physiology. Doubtless one trained in physiology would, now and then, take exception to certain statements made as not being absolutely true to the actual facts. But, as the author says, in a book of this kind one "must stand sufficiently far away from his subject to lose sight of its details, whilst keeping its outlines clearly in view." Few of the conclusions of physiology are indisputable; it is a complex and growing science. To present it popularly, one must be dogmatic, although this book does not seem to be unduly so.

The question arises, are such books worth while? Is a little knowledge dangerous? With the broad extent and complexity of present-day science, is it not better wholly to depend on the expert? Probably so, with regard to any detail of fact, or procedure; but if a reader of such a book gains something of the spirit of a science, of its principles, its extent and its limits, he will gain valuable lessons. Above all, if the reading of such a book leaves him with a certain humbleness of spirit, it will do much in confining his opinions and actions to their proper sphere, or inciting him to further study preparatory to a proper self-reliance. A service of this kind, it seems to us, the book in question is capable of performing.

The illustrations are reproductions of diagramatic blackboard drawings, and add to the clarity of the text. The paper is good, the printing clear. The book is recommended as suitable for the lay reader and junior students. It is not sufficiently advanced for a textbook for the medical student.

C. H. L.

Surgery, Its Principles and Practise by Various Authors. In five volumes. Edited by W. W. Keen, M. D., LL. D., Emeritus Professor of Surgery and Clinical Surgery, Jefferson Medical College, Philadelphia, and John Chalmers DaCosta, M. D., Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Volume V, octavo of 1274 pages with 550 Illustrations, 45 in colors. W. B. Saunders Company, Philadelphia and London, 1909.

This is the closing volume of Keen's Surgery. The most important part of the book is the article on the Surgery of the Vascular System by Matas. In some 330 pages of text one finds a masterly and up-to-date exposition of the surgery of the heart, pericardium, arteries and veins. The subject of aneurism receives very full consideration and, as is to be expected, the author's original methods of treating aneurism are fully detailed. Matas shows by statistics the superiority of this method of endoaneurismorrhaphy over other procedures. This section gives evidence of great care in preparation and of extensive literary research.

Montgomery and Fisher contribute the section on Surgery of the Female Genito-Urinary Organs. The articles on Surgical Technique, Ligations, Amputations, and Plastic Surgery are quite satisfactory.

C. H. Mayo writes on the Surgery of the Parathyroid bodies.

Frazier discusses operations on the fifth and eighth cranial nerves. Hare writes the chapter on General Anesthetics and Lennander and Zachrisson on Local and Subarachnoid Anesthesia. Hare agrees with the view of others that scopolamin-morphin anesthesia is unsafe.

Lennander expresses his preference of novocain-adrenalin solution for local anesthesia.

In a brief chapter on the Legal Relations of the Surgeon, Carson gives some very good advice in the matter of giving expert testimony.

One would like to see rather more space devoted to the subject of the x-ray in surgery than is allotted in this volume; the article by Codman is however a sufficient and satisfactory one; he does not regard favorably postoperative x-ray treatment as a prophylactic measure in maligant disease.

The volume closes with chapter on the Surgical Organization of a Hospital by A. J. Ochsner. C. A. H.

Examination of the Urine. A Manual for Students and Practitioners. By G. A. DeSantos Saxe, M. D., Instructor in Genito-Urinary Surgery, New York Post-Graduate Medical School and Hospital, etc. Second edition, revised; with text illustrations and colored plates, a number of them original. Price, cloth, $1.75 net. W. B. Saunders Co., Philadelphia and London. 1909.

This work is one which appears to be quite complete and thoroughly trustworthy. It has been brought up to date in a second edition. While concise, it is full enough for practical purposes, and the arrangement is good. One who wishes a volume devoted exclusively to urinary examination, doubtless would find this handbook most satisfactory. C. L. C.

A Textbook upon the Pathogenic Bacteria. For Students of Medicine and Physicians. By Joseph McFarland, M. D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. Sixth revised edition. Octavo of 709 pages, fully illustrated, a number in colors. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, $3.50 net.

Bacteriology can be considered from two standpoints. First, as botanical cytology, a subdivision of biological science. Upon this side the subject is little developed. Secondly, it is to be considered in its relation to disease. It is this side which has been so markedly developed by medical investigators and which is of chief interest to the medical student. It is from the latter viewpoint that McFarland considers the subject. The book deals only with the disease-producing bacteria, with their relation to diseases caused by them and with the technical methods necessary for their study. It does these things most excellently.

The first 17 chapters, comprising 283 pages, are devoted to technical methods and to a consideration of those general facts which explain the pathogenic action of bacteria and the mechanisms by which the body overcomes bacterial invasion. The technical procedures are described in sufficient detail to make the book a good working manual.

Much more important to the student, and in a way unique, is Part II: "Specific Diseases and their Bacteria." This portion of the volume is not so much a cut and dried bacteriological discussion as it is a valuable consideration of the natural history of the infectious diseases, giving not only the needful technical information of the organism concerned in a given disease, but the reaction produced by it in the body and, in so far as is known, the mechanisms through which such reactions are set up and are overcome. The student who reads the final 388 pages with understanding and intelligence will have knowledge which embraces more than simple medical bacteriology. The classification of diseases produced by bacteria cannot help but impress upon the reader important differences in the nature of infectious processes.

Even if one is unwilling to grant that *Treponema pallidum* belongs among the bacteria it is better for the student that he should have McFarland's description of syphilis as a bacterial infection than that he should have no knowledge at all of the disease, since there is no textbook upon the pathogenic protozoa which treats as exhaustively of the diseases produced by these organisms as of the organisms themselves or as fully as McFarland does of the bacterial diseases. As much cannot be said for the discussion of hydrophobia. Granting that conservative judgment, in view of the controversy as to the nature and etiological relation of the Negri bodies, demands that hydrophobia be included in the book, one can see no reason for placing it under the toxemias, immediately following tetanus. While the symptomatology of the two diseases may be very similar, there is little actual evidence that in rabies the ganglion cells are destroyed by a toxin, as is the case in tetanus. The infectiousness of central nervous system material, the nature of such histological changes as do occur, all actual evidence that we have indicates that in hydrophobia the ganglion cells are attacked by the infectious agent itself and not by a toxin transported from the primary local infection. The volume is otherwise so consistent that one wishes that this chapter might be omitted or removed from its present position.

The reviewer is surprised that under the methods for the isolation of *B. typhosus* the use of lactose bile is not mentioned. This omission, as well as certain other small points, the use of "tubercular" for "tuberculous" (p. 346), the spelling of Welch with an "s" (p. 285) and the inclusion of the misspelled name in the bibliographic index, should receive attention in the next revision.

The index ought to be used by those who write textbooks as a model of what a table of contents should be. O. T. S.

A Textbook of Physiology: for Medical Students and Physicians. By William H. Howell, Ph. D., Professor of Physiology, Johns Hopkins University, Baltimore. Third edition, thoroughly revised. Octavo of 998 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, $4.00 net; Half morocco, $5.50 net.

To those familiar with Howell's Textbook of Physiology the new, third, edition (1910) can be described fully by saying that it is the second edition (1907) revised to include the advances in the science made in the past three years. The arrangement of chapters and subheadings is identical with the former edition. The subject matter has been rewritten and increased here and there to accord with the accepted results of recent investigations, making numerous additions amounting in all to 58 pages.

The second edition became generally recognized as one of the best one volume textbooks in English. In this work, not too large and not too expensive, the author used great care in apportioning space to each topic that he might include the necessary discussions and the generally accepted conclusions in a very large number of physiological problems. The new book has the same general completeness and the same clear, concise statement of conclusions, which will make this edition as popular with students and practitioners as the former one has been. A. R. W.

Acknowledgments.

Social Service and the Art of Healing. By Richard C. Cabot, M. D., Assistant Professor of Medicine in the Harvard Medical School, Assistant Visiting Physician at the Massachusetts General Hospital. Moffat, Yard & Co., New York. 1909. Price, $1.00 net.

Annual Report of the Board of Regents of The Smithsonian Institution. Showing the Operations, Expenditures and Condition of the Institution for the Year Ending June 30, 1908. Government Printing Office, Washington, D. C. 1909.

The Essentials of Chemical Physiology. For the Use of Students. By W. D. Halliburton, M. D., LL. D., F. R. S., Fellow of the Royal College of Physicians, Professor of Physiology in King's College, London. Seventh edition. Longmans, Green and Co., New York City. Price, $1.50.

Public Health and Marine Hospital Service of the United States. Bulletin No. 58. Digest of Comments of the Pharmacopoeia of the United States of America (eighth decennial revision) and the National Formulary (third edition) for the calendar year ending December 31, 1906. By Murray Galt Motter and Martin I. Wilbert.

The Gouty State, W. J. Morrison, Publisher, 43 Broad street, New York City.

Annual Report of the Library Committee of the College of Physicians of Philadelphia for the year 1909.

Publications of the Massachusetts General Hospital, Boston. Selected Papers by the Staff. Vol. II, No. 2, Oct., 1909.

Publications of the United States Public Health and Marine-Hospital Service. January, 1910.

Public Health and Marine-Hospital Service of the United States. Bulletin No. 59. The Oxidases and other Oxygen-Catalysts Concerned in Biological Oxidations, by J. H. Kastle. Public Health Reports. Vol. XXV. Nos. 6 and 7.

Medical News.

A. F Spurney has removed his office to 403 The Osborn Bldg., Prospect Ave., cor. Huron Rd.

Gordon N. Morrill has opened an office at 2047 East 9th street.

H. H. Drysdale has been appointed by Gov. Harmon a member of the Board of State Charities, to succeed W. N. Oren of Wilmington.

The Charity Hospital Medical Society met Wednesday, February 9, 1910. The program was as follows: 1. Presentation of Surgical Cases, A. N. Dawson. Presentation of Medical Cases, R. J. Ochsner. 2. The Medical Attitude toward the Emanuel Movement, J. S. Tierney. 3. A Case of Embolism of the Lung following Puerperal Phlebitis, A. G. Schlink.

The St. Alexis Alumni Association met at the Hollenden, Thursday, February 3, 1910. The program was as follows: 1. Vesical Calculus, W. J. Manning. 2. Ectopic Gestation, A. H. Bruening.

The Lakeside Hospital Medical Society held its forty-fifth monthly meeting on Wednesday, February 23, 1910. The following program was presented: 1. Presentation of a Case of Meningitis Cervicalis Tuberculosa, C. F. Hoover. 2. Presentation of a Case of Aneurism of the Aorta, G. Boyer. 3. Presentation of a Case of Pericarditis with Effusion and Pleurisy with Effusion, C. W. Wycoff. 4. Presentation of a Case of Bilateral Anterior Staphyloma in a Child of Three Years, H. N. Cole. 5. Presentation of a Case of Injury to the Urethra with Infiltration of the Scrotum, O. H. Love. 6. Report of Four Cases of Afebrile Acute Appendicitis, L. A. Pomeroy. 7. Exhibition of Pathological Specimens, A. W. Ellis.

George Chapman, Toledo, has received the appointment of physician to the workhouse, succeeding F. A. Cobb.

W. W. Conger, formerly located at 221 Main street, Toledo, has moved to the corner of Starr avenue and Main street.

Chas. Betts, of Toledo, has returned from a European trip.

D. M. Marshall, Toledo, has discontinued all but his office work, because of impaired health.

Oscar Hasencamp, editor of The Toledo Medical and Surgical Reporter, has announced the removal of his office to the corner of Adams and Michigan streets.

J. D. Ely, of Toledo, has discontinued the practise of medicine, and will move to Hudson, Michigan. A. C. Graham, formerly of Kansas City, Missouri, will succeed to his office, 1209 Oak street.

Burt G. Chollette, Toledo, has returned from a visit to Eastern hospitals.

John J. Simon, of Rockford, is the defendant in a $50,000.00 alleged malpractise suit filed in the Federal Circuit Court at Toledo, the plaintiff being Stanley Petry, 18, of Fort Wayne, Indiana, who avers an improperly reduced fracture of a leg.

The Public Schools of Lewiston, Ohio, closed February 3, 1910, because of an epidemic of diphtheria.

The Children's Home, at Miami, a short distance out of Toledo, was reported February 3, to have 40 inmates suffering from measles, of whom three had died up to that time.

In Toledo, 393 cases of measles were reported during the month of January.

The Toledo, Ohio, death rate for 1909 was 10.72 per 1,000, the lowest it has been since 1898.

The Toledo District Nurses Association attended 1,172 of that city's sick poor during 1909, making 7,917 visits for this purpose. The cash disbursements for the year amounted to $6,761.65; 700 sheets, gowns and pillowcases were loaned, and 300 given away; 261 maternity cases were cared for, and 150 babies provided with outfits.

At the annual meeting of The Defence League of The Academy of Medicine of Toledo and Lucas County, W. J. Stone was reelected to the office of secretary. Dr Stone, who was instrumental in organizing this league, has done splendid work, and to him belongs the credit for the great progress made along the line of defence work.

State Association Meeting News: The Academy of Medicine of Toledo and Lucas County has appointed the following committees to get ready for the May meeting: Ways and Means, C. N. Smith, chairman; Entertainment, George Chapman, chairman (under this committee, Jeremiah Metzger will make the hotel arrangements, W. W. Coldham will provide the entertainment for the physician-guests, and H. H. Heath the entertainment for the ladies); Publicity, C. D. Selby, chairman; Registration, Jas. A. Duncan, chairman; Reception, John A. Wright, chairman; and Clinics, G. M. Todd, chairman. These constitute the Committee on Arrangements, of which John G. Keller, President of the Academy, is general chairman. Every member of the Academy will act in some capacity on one of these committees.

The official headquarters will be the Hotel Secor, where the House of Delegates and the Council will meet. The exhibitors will also be located here. The scientific meetings will be held in the Y. M. C. A. building, a short distance from the foregoing.

The entertainment features of this meeting are devloping rapidly. For the men, there will be smokers and the banquet, while The Business Men's Club offers its spacious quarters in the Nicholas Building, which is midway between the places of meeting, as a chatting, loafing and smoking place. For the women, there will be an automobile ride around the historic Maumee Valley, luncheons, teas, receptions, and a theatre party; in short, they are to be occupied pleasantly throughout the meeting.

The Academy of Medicine of Toledo and Lucas County meetings:

The Medical Section met Friday, January 21, 1910. The program was as follows: 1. The Medical Treatment of Exophthalmic Goiter, John North; discussion opened by W. J. Gillette. 2. Some Observations on the Treatment of Syphilis, J. Metzger; discussion opened by E. D. Tucker. The following officers were elected for the ensuing year: Chairman, W. E. Stewart; Vice-Chairman, L. A. Levison; Secretary, H. Smead.

The Surgical Section met Friday, January 28, 1910. The following program was presented: 1. Persistent Vomiting of Pregnancy: Is Induced Abortion Justifiable for its Relief, J. A. Wright; discussion opened by Drs Myers, Stone, Bowman and Doherty. 2. The Treatment of Dystocia from Pelvic Disproportion, George Booth; discussion opened by Drs Dice, Smead and Chapman. The election of officers for the ensuing year resulted as follows: Chairman, W. J. Gillette; Vice-Chairman, G. M. Todd; Secretary, Louis Smead.

A General Meeting of the Academy was held Friday, February 4, 1910. The program consisted of an excellent address upon Syphilis of the Central Nervous System, by C. F. Hoover, of Cleveland.

The Pathological Section met Friday, February 11, 1910. The program was as follows: 1. Report of a Case of Brain Tumor with Postmortem Findings, W. H. Snyder. 2. Carcinoma of the Stomach, with Case Reports, J. P. Gardiner and H. W. H. Nelles.

The Medical Section met Friday, February 18, 1910. The program was as follows: 1. Amyotonia Congenita, Louis Miller; discussion opened by W. H. Snyder. 2. The Wasserman Reaction and its Nogouchi Modifications, L. A. Levison; discussion opened by J. G. Keller and R. P. Daniels.

The Defiance County Medical Association: At the last regular meeting A. L. Steinfeldt, of Toledo, read a paper upon The Commoner Eye and Ear Diseases. H. W. Dachtler, of Toledo, discussed The Commoner Fractures. Norville Dean, of Hicksville, also gave a paper.

The Muskingum County Medical Society: At the last regular meeting the following program was presented: 1. Some Points in the Treatment of Syphilis, C. M. Rambo. 2. Rational Dietetics, T. H. Infield. 3. H. T. Sutton reported a case of carcinoma of the pylorus with removal of the growth including about one-half of the stomach. The gastro-enterostomy was done with a Murphy button which was passed on the eighteenth day. The patient made a good recovery. 4. E. C. Brush reported a cast of hematoma of the ovary and exhibited the specimen. 5. W. A. Melick reported a case of senile cataract removed with the capsule following the method of Major Smith of India. 6. J. T. Davies reported a case of foreign body, a large darning needle, in the thigh. 7. G. Warburton reported a case of gangrene of the lung following a fractured rib.

The Zanesville branch of the National Association of Retail Druggists entertained the physicians of Zanesville at a banquet on February 17, 1910. The meeting was intended to further the propaganda to do away with proprietary preparations and to induce the physician to prescribe U. S. P. and N. F. preparations. A lengthy discussion took place and the movement received a great impetus.

The Ashtabula County Medical Society held its fiftieth regular meeting at Ashtabula, Tuesday, February 1, 1910. O. A. Dickson, Jefferson, Ohio, read a paper upon the Treatment of Pneumonia. The discussion was opened by A. W. Hopkins and F. W. Upson.

The Erie County Medical Society met February 23, 1910 at Sandusky. H. L. Sanford, of Cleveland, presented a paper on Chronic Posterior Urethritis.

The Good Samaritan Hospital, Sandusky, will be opened early in March, 1910. It was formerly the Marine Hospital, of 25 beds, but is being remodeled and fitted up by an advisory board of managers of which Dr. Carrie Chase Davis is president. It is to be a Protestant hospital and nearly all the denominations are working for it. A charity ball has been given for its benefit from which $1,100.00 was realized. The rooms are being furnished by the various churches and lodges, as well as by some business houses. It is said that there are more applications to furnish rooms than there are rooms to furnish, also that there are donations of from $5.00 to $5,000.00 forthcoming.

There is some doubt as to whether Sandusky can support two hospitals, since before Providence Hospital was started some six years ago many attempts to support a hospital were made but failed, but now that a "Greater Sandusky" is expected, another hospital may be in order. Providence Hospital is one of the best conducted small hospitals in the State and is well patronized and its supporters hope that it will continue to receive the patronage which it so well deserves.

The Tuscarawas County Medical Society decided at their annual meeting in January to hold four open meetings, during the year 1910, in the four largest towns in the county. The object of these meetings is to impress upon the public the importance of physical defects of school children and to devise some means by which they can be more readily recognized by the teachers and parents so that proper medical aid may be secured. Another object of these meetings is to break down certain barriers between the profession and the public, due largely to an attitude of the general public towards medical men and medical fraternities in general. Much good is expected to result from these meetings.

At the first of these meetings, held on February 1, 1910, the following program was presented: 1. The Teacher's Influence in the Formation of Physical Ideals, W. R. Hosick; discussion opened by J. E. Hosick. 2. Influence of Modern School Life on Digestion, J. M. Smith; discussion opened by C. H. Sawyer. 3. Care of Sight and Hearing, R. A. Wilson: discussion opened by P. H. Wagner.

The Summit County Medical Society met in Akron, January 4, 1910. The following newly elected officers were installed: President, Edmund A. Weeks; Vice-President, Harry S. Davidson; Treasurer, Louis J. Wise; Secretary, George M. Logan; Milk Committee (new member), R. H. McKay; Board of Censors (new member), J. H. Weber; Committee on Public Health and Legislation (new member), M. D. McDonald; Committe on Library (new member), J. H. Seiler; Delegate, C. E. Held; Committee on State Legislation, J. A. Hulse; Committee on National Legislation, H. C. Theiss.

After the installation of officers Lawrence T. Litchfield, of Pittsburg, Pa., read a very interesting and instructive paper on The Practical Application of the Principles of Immunity.

The technical part of the program at the regular February meeting of the Society consisted of a Symposium on Hernia at which the following papers were read: 1. Anatomy of the Parts Affected and Etiology, R. C. Kendig. 2. Symptomatology and Mechanical Treatment, H. S. Davidson. 3. Diagnosis and Surgical Treatment, A. F. Sippy.

The paper read by H. S. Davidson merited special attention on account of its calling the attention of those present to the almost universal abuse of hernias treated by mechanical devices. Hernias are often fitted with trusses by druggists or others who are neither physicians nor surgeons and who have no training that would enable them to know the pathological indications in the individual cases. In the opinion of the writer the truss-fitter is a violator of the State Medical Laws, which prohibit any but registered physicians from using any appliance, application, etc., for the treatment or cure of any bodily infirmity or disease. In order to stop the practise, the physician should qualify and do the work himself.

William J. Robinson, editor and founder of the Critic and Guide, Therapeutic Medicine and the American Journal of Urology, is now editing The Medical Review of Reviews. The editorial offices of the Medical Review of Reviews have been removed to 12 Mr. Morris Park W., New York City. The scope of the journal will be enlarged and every department will be strengthened. The subscription price remains the same, namely, $2.00 per annum.

T. N. Alban, Mansfield, has moved into new offices at 61 W. Mulberry St.

Deaths.

Henry Kirke Cushing, Cleveland, Ohio, died February 12, aged 82.
William H. Taylor, Cincinnati, Ohio, died February 6, aged 74.
Frank E. Englebry, Vermillion, Ohio, died January 22, aged 45.
Seth W. Beckwith, Toledo, Ohio, died November 23, aged 54.
Rolon M. Fulwider, Urbana, Ohio, died January 24, aged 55.
Ephraim Luellen, Westfield, Ohio, died January 13, aged 85.
David G. Wilder, Cleveland, Ohio, died January 14, aged 63.
Frederick S. Hunter, Toledo, Ohio, died January 6, aged 43.
George E. Brattain, Wapakoneta, Ohio, died January 29, aged 51.
James Coneffe, Columbus, Ohio, died November 10, 1909, aged 33.
John C. Coleman, New Marshfield, Ohio, died January 21, aged 65.
Robert M. Fulwider, West Liberty, Ohio, died January 24, aged 56.
Eben Behymer, Mount Washington, Ohio, died January 24, aged 65.

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Traumatic Neuroses from a Medical Point of View.

By ARCHIBALD CHURCH, M. D., Chicago, Ill.

The consideration of the nervous conditions which develop subsequent to injury has a very vital interest for the medical man, and for the lawyer, as well as for the laity; for the employee, as well as for the employer. It has attained such importance that in Cook County, Illinois, the greater part of the time of the courts having jurisdiction is now taken up in hearing personal injury suits, in a large proportion of which nervous states of various kinds are alleged to have resulted from accidents. As there is no bodily injury that a claimant may sustain which does not, in some degree or other, cause disturbance of his nervous apparatus, the frequency of such questions is apparent. It is therefore natural that the neurologist should be called into these cases, and all should be informed as to the status of these conditions.

In the literature of this subject two names stand out most prominently, those of Erichsen and Oppenheim. Erichsen established a point of view that for a long time dominated the English-speaking profession; in Germany, Oppenheim's work was similarly recognized; while in France, the early teachings of Charcot, and subsequently those of his students, have dominated French opinion.

The traumatic neuroses, so called, have given rise to a variety of names which have been of general application. I may mention railway-spine, railway-brain, concussion of the cord, concussion of the spine, traumatic neurasthenia, traumatic psychoses, litigation psychoses, traumatic insanity, etc.

Read before the Medicolegal Section of the Academy of Medicine of Cleveland, January 27, 1910.

While Erichsen and Oppenheim are among the earliest to whom we turn, we must remember that long before them, Abercrombie and Ollivier discussed what was called concussion of the spine.

It is a curious thing to speculate why the spine has so much to do with these traumatic neuroses. The spinal muscular support of the human being, owing to the erect posture, is immensely greater than that of the quadruped. As a matter of fact the spine in the human being waves like a feather in a breeze and is subject to many accidents. Every lateral thrust tends to upset it, every movement of arm or leg or head causes changes in the vertebral relations throughout its entire length. There is no ill health without a backache. In sitting the body is largely supported by the spine. This flexible osseous structure is supported by ligaments, cartilage and muscle, and every step causes a variation in its position. The spine plays a large part in human affairs and all literature shows its importance. A man who has considerable backbone is looked upon as a man of character, and a lack of it is correlated with the yellow streak and the white feather; and so, perhaps, it is not strange that it bulks largely in the nervous conditions which follow traumatism. A man cannot be injured in any way without in some fashion having his backbone affected, and because of the importance attached to the backbone his attention easily becomes riveted upon it and there grows up such a cylinder of spinal symptoms that almost anything of a functional spinal nature can be developed.

Erichsen, an English practitioner, in 1866 was the first to formulate anything very definite about injury to the spine. His book, published first in 1871 and later in 1875, is based upon 53 cases, only 17 of which were railway cases. Upon but one of the 53 was there an autopsy, which was made by Lockhart Clarke and which shows that the case was one of locomotor ataxia. Erichsen speculated the hypothesis that the symptoms presented by these patients were due to some disturbance in the molecular arrangement of the spinal cord. That was his theory, and he constantly makes use of the expression that the cord, under these circumstances, is changed very much as a magnet would be demagnetized by a stroke of a hammer,—a view which has not been supported in the subsequent working out of the cytology, physiology and pathology of the spinal cord. There is absolutely no foundation for a molecular theory.

In 1866 when these views were expressed, we may remember that the lesions of but one spinal disease were at all clear, viz., tabes dorsalis. Nothing was known of the electrical reaction of muscles and nerves, practically nothing of the anatomy and physiology of the cord, and nothing of the significance of the reflexes. Only rarely in Erichsen's cases was any attention given to sensory disturbances. From paraplegia to simple nervousness, it was an unknown field. Erichsen grouped this large range of nervous conditions all together as cases of "spinal concussion," but he does not even confine himself to spinal cases as conditions are mentioned in which one side of the face was affected and the opposite side of the body, showing that there was cerebral involvement.

Twelve years later Erb in Germany published papers in which he endorsed the molecular theory.

In 1879 Riegler produced a work in which he said that those cases in which organic processes could not be shown were not due to molecular changes but were feigned conditions.

As a matter of fact the neuroses following traumatism have been looked upon as molecular, as vascular, and as malingering by various observers at various times.

I am glad to say that the contributions to the subject in this country came nearer to the modern conception of the matter. Hodges in 1880 in a paper before the Boston Society for Medical Research made the distinction between organic cases and those of a functional character and insisted that there was nothing in the inorganic cases which justified the theory of molecular or vascular factors.

In 1883 Page, an English railway surgeon, produced a book antagonistic to Erichsen's writings, but his general conclusions show that he was of a judicial frame of mind and was disposed to be fair. In 1885, and again in 1891, his book appeared recording 234 cases, only one of which came to autopsy. Many of these cases followed minor injuries. He recognized that there were functional cases in which the symptoms aped nervous diseases, and in 1885 he clearly spoke of traumatic hysteria and gave the condition some importance.

Next in 1884 came Dana of New York, whose classification made at that time remains unquestioned today. He recognized the conditions of traumatic hysteria, traumatic neurasthenia, and traumatic hypochondriasis, in addition to spinal sprains. These he found usually in association, not as clear-cut or typical conditions but as a combination of mental shock and physical bruising.

In 1885 Oppenheim and Thomsen produced a report in which they maintained the organic, mainly vascular, basis of traumatic neuroses. Both these men were students of Westphal, whose views upon the subject were reflected in their publication. Later Oppenheim, not now associated with Thomsen, changed his point of view and claimed that in railway-brain, foci of inflammation and softening occurred in addition to vascular disturbances.

It was in 1889 that Oppenheim brought forth his epoch-making book "Die Traumatische Neurosen" in which, in addition to traumatic hysteria and traumatic neurasthenia, he described another condition which he called "traumatic neurosis" and which might occur in combination with traumatic hysteria and neurasthenia. This term, "traumatic neurosis," attained great vogue in Europe and has spread over this country as well, so that we everywhere hear it employed, the conception being that it applies to a set of symptoms, more or less uniform, constituting a special disease.

In 1889 Charcot published his views upon the subject and demonstrated that the nervousness following traumatism, when not due to organic changes, could well be referred to neurasthenia or hysteria or to a combination of the two; and his views have held valid ever since.

About the same time (1888) Strümpel described traumatic "local and general neuroses." Under general neuroses he placed neurasthenia and hysteria, while his local neuroses are illustrated by such conditions as speechlessness, or a loss of power in a hand or a finger, or a contracture of the lower jaw. These would now be recognized as distinctly hysterical.

At about the same time Clevenger, in his book dealing with spinal concussion, turned back and adopted the original work of Erichsen, although familiar with and quoting the work of Oppenheim and Charcot. He proposed the term "Erichsen's disease" to cover the conditions described as spinal concussion and he even defined it in definite terms.

Oppenheim's idea of a "traumatic neurosis" was shared by Strümpel, but bitter discussion arose on all sides. Eisenlohr, Schultze and Bruns, men of equal standing, questioned the existence of "traumatic neurosis" as a definite disease. So with ups and downs, but with a tendency in the profession at large to the belief that "traumatic neurosis" was a disease, the matter went along until in 1893 the International Medical Congress, meeting at Hamburg, refused to admit the term "traumatic neurosis" to the nosological table and agreed that this condition should be considered as traumatic hysteria, traumatic neurasthenia, traumatic hypochondriasis and combinations or mixtures of these three.

I may say that no textbook of any prominence which has appeared during the last ten years has recognized "traumatic neurosis." The admirable work of Pierce Bayley which appeared in 1896 must be particularly mentioned. He divides the nervous conditions following injury into traumatic hysteria and traumatic neurasthenia, and he also describes a traumatic hypochondriasis.

In this historical review, for which I am much indebted to Bayley, I have brought you down to the point where the "traumatic neurosis" has made its lethal exit. Let us now turn our attention to traumatism of the nervous system with the clear understanding that traumatism is both psychical and physical, and that the mental injury is often of the greater importance.

And what is concussion? The early days of my medical life were embittered by my inability to understand the difference between compression and concussion of the brain. Later on when the term "brain contusion" was added, I was on the verge of despair. Out of this quagmire I was led by some one pointing out that concussion was not a disease, that it was simply a form of violence, that it was merely a misdirected force, that it was a mode of injury. Since I have been able to get out of my mind that "concussion" meant something morbid, I have felt like Moses viewing the promised land. Concussion is merely the action of unguarded forces that may result in a number of things. Many of them are surgical results, with which we shall not concern ourselves particularly at this time.

We may classify the results of injury to the nervous system perhaps as follows:

1. Organic injury including the surgical injuries.
2. Traumatic neurasthenia.
3. Traumatic hysteria.
4. Combinations of these three.
5. Traumatic epilepsy.
6. Traumatic insanity.

7. The litigation psychosis.
8. Various combinations of the preceding.

(2) Marked neurasthenia may be caused by traumatism and is exactly like the neurasthenia which develops without traumatism. I need not go into the symptoms of neurasthenia after traumatism, but they are exactly like those in neurasthenia which occurs in the overworked school teacher or the overworked farmer, but when following trauma the condition is likely to be emphasized by certain conditions. It may be exaggerated by suggestions of hopelessness on the part of friends; by legal advice; or even by medical solicitude and tactlessness; it may be associated with the prospect of profitable litigation, so that a psychical atmosphere is developed to which I will refer later.

(3) Traumatism may cause hysteria and this is usually in proportion to the amount of fright which accompanies the physical shock, and in inverse proportion to the physical injury. If the injury occurs during sleep or under such conditions that there is no preceding fright or fear, hysteria almost never develops; but when prior to the injury there is a chance for building up a sense of fright or fear, hysteria is likely to be manifested.

(4) Hysteroneurasthenia. Pure traumatic hysteria in women is not rare, but you almost never find a case in the male sex unattended by neurasthenia, so that these two conditions are commonly found associated. As a matter of fact we do not find typical cases of either singly except in females; a rule, of course, honored by exceptions. Combinations in these cases being common, we have a third syndrome—hysteroneurasthenia. Bayley has proposed a condition marked mainly by mental features which he calls cerebrasthenia. But the mental features of this group are the common complaints of neurasthenia and I see no necessity for establishing this additional class. Neurasthenia, indeed, is always a psychosis; in it there is fear of not getting well, lack of mental stamina, worriment, depression, irritability and some loss of self-control. So with hysteria; it is a disturbance of the brain and of brain function. Both are psychoneuroses.

(5) Epilepsy is another psychoneurosis which is frequently a cause for a suit for damages. Indeed, there is no case of head injury in which the assertion is not made with a certain degree of positiveness, that the patient is likely to develop epilepsy. Every medical witness is asked in the case of a skull injury whether it is not possible that epilepsy may develop. And the physician

must truthfully say that it is possible. But what is the degree of probability? In the first place, epilepsy is a very common disorder and a great many cases occur which are not easily recognized. In Illinois there is one case of epilepsy for every 350 of the population. Now as epilepsy is practically a disease occurring between fifteen and forty years, you see what a large proportion of all those in the productive years of life are epileptics. It is strange, by that fact alone, that it does not more frequently figure in damage suits.

Turning to the statistics of the Franco-Prussian war, we find among the soldiers of the Prussian army, as shown by the surgical records, that there were 8985 cases of head injury, practically 9000 cases; and out of these only 46 developed epilepsy; that is 5 per 1000, or one-half of one percent. How common it is for head injuries to come into the hospitals, and yet the subsequent development of traumatic epilepsy is extremely rare. Great injury may be done the skull and brain and be followed by no untoward condition. This is so particularly in children, but also in adults. It would almost appear that the best way to avoid epilepsy is to get a head injury. It must be borne in mind, however, that soldiers are not potential or actual epileptics; they are a picked body of healthy men and discharged if they present this condition. When we say on oath that it is possible for epilepsy to develop after head injury, we should also say that this possibility is a small one.

(6) Insanity is another condition which may follow traumatism, but I am glad to say that traumatic insanity is absolutely rare. The insanity that follows the administration of anesthetics is even rarer. Some years ago I investigated 2254 cases of insanity to see what proportion gave a history of head injury, and to determine in how many the insanity was properly attributable to the injury. I found that but 3 per 100 had "alleged" head injuries. These statistics, which were made up from the statements of friends and relatives, showed that many of the alleged head injuries were of the most insignificant character. For instance, a girl bumped her head while getting some apples in the cellar and three years later she became insane. In some way her condition was thought to be connected with this injury, whereas now we would recognize the case as a typical one of dementia praecox. A large proportion of the head injuries were of this character. Separating those that were not questionable, only

1 in 300 could, in any reasonable sense, be attributed to traumatism.

Turning again to the figures of the Franco-Prussian war, in 13 of the 8985 head injuries insanity developed, that is 1½ per 1000. The natural liability to insanity is greater than that, just as in the case of epilepsy. In most cases of insanity there is no single cause; usually there are a multiplicity of causes.

But insanity does certainly occur as a result of head injury, that is to say of brain injury. There is a well-defined clinical type of acute insanity which follows directly after head injuries and which appears after a few hours, days, weeks or months, during which period there is a continuous chain of symptoms linking the mental disturbance with the traumatism. I recall a case following injury by a fall from a bicycle. There was immediate unconsciousness, and later the patient was speechless, with loss of power on the right side and mental obscuration. An opening an inch and a half in diameter was trephined over the motor area on the left side of the head, and when the dura was reflected the cortex was seen to be black. This ecchymosis extended beyond the visible limits of the skull opening, so another was made over the parietal region on the left side and the same condition was found. A third and fourth were then made on the right side, and here the contusion was equally pronounced. The boy recovered from the operation and regained his speech and motor power, but in a few days became maniacal. This condition lasted several months, then subsided gradually but permanently. The patient has been fairly successful in journalistic work for the past 12 years. This I give as a type case. Seventeen such cases are reported by Meyer of Johns Hopkins, who is to have charge of the new Phipps Psychopathic Hospital. Brush, of Brooklyn, collates 28. Other small groups are reported by Kraepelin, Peterson, Kellogg. These are not large numbers, not even running into the hundreds; it is a rare condition. About half such cases recover, one-quarter die, and the remainder make partial recoveries, have relapses or develop a terminal dementia. In all of these cases other conditions are also found which have a bearing on insanity, such as alcoholism, arteriosclerosis and previous attacks of insanity.

After any laceration of the brain, or hemorrhage, or softening, or tumor, or any gross lesion, there sometimes develops a dementia, organic in origin, due to loss of brain tissue. If these injuries occur early in life, as in childhood, the intellectual qualities already attained may recede, and if such injury occur during intra-uterine life idiocy may result, and thus we have traumatic dementia, imbecility and idiocy, respectively.

(7) There is a variety of mental disturbance which is of particular significance; what I might venture to call a litigation psychosis of a hypochondriacal complexion. Those who have suffered injury attributed to the carelessness of someone else become mentally centered upon themselves, their grievances and gloomy prospects, with emotional attitudes of moroseness or vindictiveness. The patient makes up his mind that "those fellows will have to pay for it" and each twinge of pain is added to his credit account; it is stock in trade to him, an addition to his capital, and hopelessness becomes a delusion as clear-cut as the delusions of hypochondriacs, who feel sure they have cancer or syphilis. It is perfectly impossible to disillusionize such a patient. When a physician suggests that an injury may be very serious the patient readily adopts that point of view, and the condition readily runs into a litigation psychosis, almost always associated with hysteria, neurasthenia or combinations of the two. Such patients are often represented to be of changed character; that they can't bear to have children around, and are morose, gloomy, apprehensive and forgetful. But if an investigation is made it will be found that the "loss of memory" is at strange variance with the accurate knowledge of all that pertains to the conditions of personal health; everything else falls into obscurity in comparison with this. These conditions give ground to the assertion that the patient is "changed" and is going to become insane, and this is utilized in the claim for damages. This mental condition usually rapidly subsides after litigation has been terminated.

I wish to be well understood when I assert that traumatic hysteria, traumatic neurasthenia and traumatic hysteroneurasthenia of a severe grade are serious conditions. I take it that no medical man who knows these conditions intimately would hesitate between the choice of amputation of the leg and a marked case of traumatic hysteria. It is a serious condition and the prognosis is not good. Patients with hysteria may get well, but in bad cases hysteria may persist to the end of life. In recovered cases individuals may again be made decidedly hysterical or decidedly neurasthenic by a traumatism of insignificant character. Unusual strain or stress of any kind at any time may throw them back into this slough. This is especially true if hysteria occurs after the age of forty, and even to a greater degree in those showing a marked change in the arteries. Complete recovery is the exception. Substantial recovery is the rule.

In making a diagnosis of the traumatic neuroses it is our duty to recognize the gravity of the condition. The longer the case is allowed to delay in the courts, the longer the individual is allowed to watch himself and his condition, the worse it is likely to be. Physicians, lawyers and friends should try to secure an early settlement of the case. In proportion as these cases are settled early they become insignificant. We are more the creatures of our emotions than we realize, and our good emotions benefit as much as depressing ones do us injury. Avoid long litigation and counsel an early settlement as a health measure.

I will incidentally call attention to a number of organic diseases of the nervous system that sometimes find themselves related to medicolegal questions.

The query frequently arises whether locomotor ataxia is caused by traumatism. The prevailing idea is that it may be hastened or intensified by trauma, but finds its origin in a long antecedent syphilis. But the man who has active syphilis may have it localized in any region or organ by traumatism. So too, tuberculosis may be localized by traumatism, and there is some evidence that brain tumor in rare instances owes its localization to an injury. But there is no evidence, so far as I can find, that locomotor ataxia or paresis has ever been caused solely by traumatism. That it may have been precipitated by traumatism is, of course, plausible.

So, too, the effect of electricity on the nervous system, including the effect of lightning, comes up when people are said to have been blinded by a flash or when they have been injured by acting as conductors of the electric current. I can find, however, no evidence of any organic change in the nervous system due to electricity in any case in which death has not occurred at once; that is, if death does not take place instantaneously, the injury is the same as from mental and physical shock or fright. What is true of electricity is true of lightning. There has never been a serious organic injury to the nervous system from these causes that did not result fatally. The fatal result is probably due more to the cardiac effect than to electrical influence upon the cerebrospinal system.

Other conditions sometimes attributed to injury are multiple insular sclerosis and paralysis agitans. The question is still undecided, but the traumatic influence is open to every doubt.

Then there is the late apoplexy of Bollinger, in which a hemiplegia of hemorrhagic character, supposed to be secondary in some instances to a small initial softening, occurs a few days or even weeks after a head injury. In the nature of things the sequence of pathological changes must be a matter of speculation in the non-fatal cases, and even in those which die it requires a radical assumption to attribute the apoplexy to the trauma after the lapse of any considerable number of days.

My plea is that we individualize every case, carefully limit our diagnostic conclusions to what are relatively well-known conditions, and refuse to be satisfied with such a catch-all as "traumatic neurosis." It is also incumbent on us as medical men that we carefully guard ourselves from contributing to the upbuilding of the subjective and mental features of these traumatic cases. And finally all—lawyers, medical men, laymen, and the public at large—should cooperate in stamping out those who foster litigation to the immense disadvantage of the injured and the robbery of the public, because in the ultimate analysis the public pays the bills.

The Pharmacopoeia and its Revision.

By JOSEPH P. REMINGTON, Ph.M., Philadelphia, Pa.

The growing interest in the coming revision of the United States Pharmacopoeia by the medical profession gives much encouragement to those who have been carrying the burden for years past and who have felt the increasing responsibility of preparing a work, now an acknowledged authority upon which depends, at least in a degree, the health of the nation and millions of capital invested in the manufacture and sale of medicines. Much has been said in condemnation of the medical profession by medical and pharmaceutical journals and writers, both medical and pharmaceutical, in connection with the abandonment of the Pharmacopoeia by physicians since the Convention of 1880.

The facts are that the Pharmacopoeia is first of all a book of standards and a law book, and, inasmuch as practising physi-

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Read before the Medico-Pharmaceutical Section of the Academy of Medicine of Cleveland, February 25, 1910.

cians generally are not concerned in the detail of the preparation of medicines, it would be absurd to condemn them for a lack of interest when the book must afford them dry and unprofitable reading and can be no more to them than a reference book, to be looked into once in a while as occasion demands. The medical profession is interested vitally, however, in the selected list of drugs and preparations which form the articles which should become official. The doses of these should also be revised exclusively by the medical members of the Committee.

Natural causes have, therefore, been at work, not only in this country but all over the world, to cause a diminution in the interest of physicians in the actual work of revising pharmacopoeias. The first United States Pharmacopoeia, published in 1820, was prepared exclusively by physicians and pharmacy, in this country at that time, was hardly a name, but, with the founding of the first college of pharmacy in 1821, a movement was started which has gathered power and influence until, at the present time, pharmaceutical instruction may be had from 105 institutions in the United States.

This fact, alone, should explain why official pharmaceutical articles in the United States Pharmacopoeia should be controlled by pharmacists; but another influence has been at work for many years which has been quietly educating practising physicians away from the Pharmacopoeia, and this is the prescribing of proprietaries and specialties. By this term is meant, not nostrums or quack medicines, but preparations owned and controlled by private corporations or firms. In the pursuit of their business they have succeeded in inducing physicians to use their products to such an extent that until three years ago the majority of physicians of this country scarcely knew what the word pharmacopoeia meant. It is probable that this same condition would be stronger than ever today if it had not been for the passage of the Food and Drugs Act on June 30, 1906. This produced a revolution and the results of the enforcement of this act are so far-reaching that no one can possibly foresee the extent of the good which will tend for the betterment of mankind in general. As can easily be foreseen standards had to be adopted to make the law operative. The United States Pharmacopoeia became the mainstay or backbone of the Food and Drugs Act.

The composition of the Committee of Revision of the present Pharmacopoeia has been the subject of some criticism in the medical journals because of the preponderance of pharmaceutical influence, but how could this be otherwise? So far as the writer knows there has been no complaint that the pharmacists, as a body, have not done good work. Here and there, of course, it has been found necessary to revise the work to fit it to better meet the strain which was suddenly felt when President Roosevelt attached his signature to the Food and Drugs Act and within the last five years every page, indeed every line, in the book has undergone the close scrutiny of all classes, manufacturers, wholesale druggists, retail druggists, physicians, patent medicine men, lawyers, country-store merchants and citizens generally. Although the Pharmacopoeia for 86 years was regarded by all parties interested as a fairly good book the interest was mainly academic and the manufacturer or retail druggist who found something in the old Pharmacopoeia which he did not like simply passed the subject by or possibly wrote to a journal stating his criticism, and, having relieved his mind in a mild fashion, the subject was practically forgotten for the time, but now the whole aspect is changed.

A chemical test in the Pharmacopoeia today may influence millions of dollars through the enforcement of the standard by the Food and Drugs Acts throughout the country. A manufacturer of a chemical salt may have been permitting the presence of a small amount of arsenic in his product and this may have procured for him, through its use by pharmacists and physicians, a large sale and no one felt sufficient interest to publish the analysis of his particular salt, but as soon as everyone realized in 1906 that inspectors and chemists were being appointed and that the Government meant business a tremendous house-cleaning was started and information, which had been withheld for years by some manufacturers, poured in by telegram, telephone and the United States mail to the Chairman of the Committee of Revision for the simple reason that the financial interests of the makers of medicinal products were in danger.

The Committee of Revision met these attacks in a business-like way; public hearings were instituted; criticism from all sources was welcomed; the excitement was allayed; and when all parties became satisfied that the Committee of Revision were just as anxious to have every cause for criticism removed, the foundations of medicine were not cracked and a supplement was issued by the Committee removing every difficulty in the way of revision.

In the meantime public interest in the greater purity of food and drugs has increased rapidly and even our public prints are filled with exposures of adulterated or misbranded products. Experience of the last three years seems to show that misbranding is practised to a much larger extent than adulteration. This is easily accounted for because it has become a habit with business men to exaggerate the merits of their products by printing upon their labels or circulars statements which are misleading, and in medicines this has grown to such an extent that at last labels, in many cases, have come to mean very little in the eyes of the initiated and the eyes of the public are rapidly being opened so that the words, "Sure cure", "Specific", "Cure guaranteed", "It never fails" and like expressions are being discounted and advertisements in the public prints proclaiming the wonderful virtues of nostrums are scanned by the public with suspicion and distrust.

Business in collateral lines has been affected greatly through the working of the Pure Food and Drug Laws. One manufacturer informed the writer that his business of making bottles for the patent medicine trade in the United States had fallen off 50% and the good work is going on.

The United States Pharmacopoeia (Ninth Revision) will be conducted under vastly different conditions than those which obtained at any previous time in the history of the United States. The best manufacturers of medicines, whether wholesale or retail, view the changed order of things with much satisfaction. Competition, which for centuries has been most unfair, will now have an opportunity of meeting its just deserts because the goods which have been sold deficient in quality will have little or no market. Heretofore the finest and purest products were used by the minority. Physicians and pharmacists, either through ignorance or design, insisted upon buying goods at the lowest possible price and manufacturers could easily be found who were willing to market their products of an insufficient degree of purity because they could save labor in their manufacture and expense in buying the crude materials and could easily undersell the maker of honest goods of the highest quality. Hence the Pure Food and Drug Laws and the standards which they have adopted came in as a great blessing to the honest manufacturer and purveyor. There probably has never before been a time in the history of the country when the physician could depend upon getting medicines fully up to the standard and often exceeding it as now.

There has come into use since the present Pharmacopoeia has been in force a term which was coined by the present Committee of Revision called the "purity rubric." By this is meant a standard which limits the percentage of innocuous impurities in an official drug. Substances which are to be used as medicines need not be chemically or microscopically free from traces of innocuous substances which do not interfere with the therapeutic value or medicinal activity of the substance and yet if the standards insisted upon the absolute removal of these substances the cost of the medicine would be doubled and in some cases the cost would be almost prohibitive. The purity rubric limits, in each case, the amount of such harmless products and it does not prevent anyone from using or specifying for any purpose a product which is free from such, and for any analytical work and for some technical uses they would be required.

A good example is afforded in quinine sulphate. It is exceedingly difficult to separate traces of cinchonine or cinchonidine but Kerner's test, which is now official, makes the sulphate 99% sulphate of quinine with 0.5 alkaloids which have very nearly the same therapeutic action as the quinine salt.

The question of publicity has occupied much of the attention of writers and critics of the present method of revising the Pharmacopoeia. Most of the writers who have advocated publicity have not taken the trouble to state the need and extent of the publicity which they demand. One organization demands that the text of the Pharmacopoeia just as it is to appear in the finished work, shall be published in the journals for criticism and approval. All of the writers neglect to give a practical plan which would satisfy the demand for publicity and at the same time work no injury or loss of time in the publication of the Pharmacopoeia. How long must the Committee wait for the last objector to send in his criticism? Anyone who has been actually engaged in the work of revision will know the difficulties of securing the consensus of opinion of the 26 members of the Committee. How is it possible for the Chairman to ascertain with any degree of thoroughness or accuracy the consensus of opinion upon each of over one thousand tests which enter into the Pharmacopoeia?

There is one official liquid (spiritus frumenti), which has required more than five years' discussion to settle the necessary tests and requirements. The Chief of the Bureau of Chemistry, Dr Wiley, former Attorney-General Bonaparte and our former President of the United States struggled with the question for two years and gave, what they supposed to be, the final decision. President Taft, one of the great men of this honored State, has reversed the decision of ex-President Roosevelt in some particulars and in all probability the question will go to the Supreme Court of the United States for final settlement.

The best method of assaying opium occupied the attention of the Committee of Revision for two years and if this were submitted to analytical chemists throughout the country today there would probably be a difference of opinion as to the best method. The practical solution of the question of publicity, in the writer's opinion, would be to publish, as the work of revision progresses, the conclusions of the Committee only on important changes which would affect the tests now in force and necessitating an alteration in the standards now existing. This would satisfy in a practical way reasonable demands for publicity and would be only fair and just to those who make the preparations and by giving them sufficient time to accommodate themselves to the demands of the new book; and it should not be forgotten that the Convention always directs the Committee of Revision to fix a time reasonably distant from the date of publication when the new standards shall be declared to be in force. The absurdity of constituting the citizens of the whole United States or even those who are interested in the Pharmacopoeia in a general committee must be apparent to all, but, on the other hand, it must be admitted that a much larger degree of publicity ought to be established because of the great increase in interest which is now being manifested in the Pharmacopoeia because it is now a law book and its standards must be upheld as they are required to be by statute.

There can be no question that the degree and extent of publicity will be satisfactorily determined by the vote of the coming Convention in May which will outline the policies which shall govern the next Committee of Revision. What is desired at the present time is constructive criticism which will aid the Convention to reach a proper understanding of the changes which should be met so that the United States Pharmacopoeia, Ninth Revision, shall be the best authority in the world.

The Coming Revision of the United States Pharmacopoeia.

By TORALD SOLLMANN, M. D., Cleveland, Ohio.

The approaching revision of the Pharmacopoeia is arousing more interest in this book than has been manifested for many years. The cause of the increased interest on the part of the pharmacists and manufacturers is not difficult to understand. The Federal Food and Drug Law makes people "sit up and take notice," who previously looked upon the Pharmacopoeia as the harmless effusion of overenthusiastic visionaries. The aroused interest of the medical profession has a somewhat deeper significance. I make bold to affirm that, even 10 years ago, almost every physician had heard about the Pharmacopoeia; but he looked upon it pretty much as the average man looks upon the Hebrew Bible—as a very admirable work, which to him has no practical interest. Such an inaccessibly high position is doubtless very flattering; but unfortunately it deprives the Pharmacopoeia of any chance of practical usefulness in therapeutics.

The last five years have witnessed a very remarkable change of attitude in therapeutics. The profession has awakened to the realization of the clay of the proprietary gods at whose feet it was worshiping, and has felt a real desire to turn to whatever is true. Recollecting its youthful reverence for the Pharmacopoeia as the true exponent of *"materia medica vera,"* it now desires to conform itself as closely as possible to these standards.

It looks upon the Pharmacopoeia as a sort of pattern of true therapeutics. If the Pharmacopoeia is made to measure up to this ideal, it has the opportunity of becoming a very important factor in the promotion of scientific therapeutics. If, on the other hand, it is merely a collection of chemical and pharmaceutical standards, however good, for an indiscriminate mass of non-proprietary drugs, with an eye solely to their popularity, and with no regard for their intrinsic merit—then the profession will turn away in disgust, and the opportunity will be lost. It is rather interesting to compare the early and recent ideals in this respect.

The preface of the first edition of the U. S. P. (p. 17), starts with this pregnant sentence. "It is the object of the Pharmacopoeia to select from among substances which possess medical power, those, the utility of which is most fully established and best understood;" this is a concise but comprehensive

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Read before the Medico-Pharmaceutical Section of the Academy of Medicine of Cleveland, February 25, 1910 statement of the ideal which we have developed. Contrast this with the ideals expressed by the President of the last United States Pharmacopoeial Convention: "If five thousand doctors in the United States believed brick-dust to be a valuable remedy and habitually used it, brick-dust would have to go into the Pharmacopoeia."

This is a bald acknowledgment that the Pharmacopoeia has been as ready to worship the false gods of popularity, as the most ignorant quack. If it is to come into its own, assume its rightful place as leader, and serve its highest purpose, that of promoting scientific therapeutics, then these low ideals must be definitely abandoned. So long as they are retained the Pharmacopoeia will fail to appeal to the thinking men of the profession. It will fail even to appeal to those who do not think; for it is inconceivable that the Pharmacopoeia will ever fall so low as to compete successfully on their own ground with meretricious and unscrupulous manufacturers.

It has been objected to our proposed high standard of admission that if a physician wishes to try or use a worthless drug, he should, nevertheless, be assured that this drug is of good quality. This no one will dispute; but I fail to see in it a valid argument for the admission of that drug to the Pharmacopoeia. For one thing, it is obviously impractical to extend the Pharmacopoeia so as to comprise all the thousands upon thousands of worthless drugs which ever have been or may be used. Some principle of selection must be employed. Our only choice is as to what that principle shall be, ephemeral popularity or scientific truth.

To illustrate the logical outcome of such a critical sifting process, I may state the gross result of my personal judgment of the 957 articles now in the Pharmacopoeia. After a careful examination of these, I am convinced that approximately one-half (468) should be dropped entirely as useless, as antiquated, or superfluous, or not of established value. Approximately one-third (258) should certainly be retained, and about an equal number (231) I consider as debatable. The number retained, according to my ideas, would be somewhere between 258 and 461, presumably nearer the latter figures. The German Pharmacopoeia contains 626. I have also considered what new substances should go into the Pharmacopoeia, and so far have only been able to think of 15 or 20 of sufficient value for this distinction. To my mind, the charge that the Pharmacopoeia is "always out of date" is perhaps true rather of the substances which it contains than of these which have not been admitted. However, the importance of the latter is altogether out of proportion to their number, and more frequent revision is indispensable.

The most important questions, then, which the Pharmacopoeial Convention has to decide is that of the standards of admission. If these are to be set low, then I fail to see what particular interest the entire matter of revision has for our profession. For the details of the revision of the formulas and tests we may safely leave, indeed we must leave, to our pharmaceutical brethren. If the standards are set high, then our real duties begin. It is self-evident that the medical profession is the only one which should have any voice in deciding the therapeutic merit of drugs. Professor Remington appears to concede this in theory: for he proposes that a list of acceptable articles be submitted by the American Medical Association, and pledges his belief that such suggestions would doubtless be accepted by the Revision Committee. This *might* work excellently in practise, but it appears to me objectionable in principle. In the first place, it still leaves the final arbitration to the Revision Committee, which for the proper performance of its technical work should be predominantly, if not exclusively, pharmaceutical. Were such a plan adopted, the Revision Committee should at least be definitely pledged to abide by the decisions of the medical committee. Even this, however, does not appeal favorably to me. The delegates to the Pharmacopoeial Convention will be sent by their constituents for the specific purpose of selecting the persons who shall be responsible for the revision, and the more directly they make this selection, the better will they fulfill their duties. They have no moral right to pass their personal responsibility to any other body of men, such as the American Medical Association; although there is no reason to doubt that the latter would perform the work equally well. For a similar reason I am not in sympathy with the recent recommendation of the trustees that the selection of the active Revision Committee be vested in a sort of electoral college. On the contrary, I believe that the responsible chairman of each subcommittee should be elected for his specific position, directly by the delegates; and similarly, that a special committee should be elected directly, for the specific purpose of passing final judgment on the question of admissions. With the other recommendations of the trustees, namely that the number of delegates from each institution be reduced, I am in hearty accord.

There are a number of other questions which I should like to discuss, especially the matter of giving everyone interested a fair opportunity to be heard, before any changes are finally adopted. But for this we do not have the time at present, and I must content myself with referring to my published remarks on these subjects.

Before closing, however, I wish to emphasize that I am somewhat out of patience with all attempts which may be made to use the Pharmacopoeial revision as an occasion for political campaigns, for the benefit of this or that man or group of men. The only campaign which is worthy of the occasion is one to bring the Pharmacopoeia into its own. This can best be done by pulling together, rather than by working at cross-purposes. Any "campaign" should be based on principles and efficiency and not on personality. Whatever men are willing and able to carry out the right ideas should be chosen for the work. Whatever men are not so inclined and those who lack ability, breadth and enthusiasm, should have no place in the revision. Personal feelings, where they exist, should be resolutely pushed into the background. We are face to face with a grand opportunity to do something "worth while" for the advancement of medicine. Let us turn to and do it.

The Care of Children After an Operation Upon the Tonsils and Adenoid Tissue.

By J. M. INGERSOLL, A. M., M. D., Cleveland.

Hypertrophied adenoid tissue may be congenital. On account of the shape and size of an infant's nasopharynx, the obstruction caused by inflamed adenoid tissue is proportionately much more serious than it is in an older child.

The nasopharynx in a child is long and shallow. The base of the tongue is relatively thinner and the larynx is higher than it is in an adult. If hypertrophied adenoid tissue is present in an infant, it may obstruct the nasopharynx and also the larynx on account of the relatively high position of the latter.

Inflamed faucial tonsils in infants are rather unusual. After the second year inflammation of the tonsils becomes more and more common until the age of puberty is reached, at which time the nasopharyngeal and faucial tonsils usually tend to atrophy.

The necessity for removing diseased faucial and nasopharyngeal tonsils is self-evident. Formerly the faucial tonsils were simply amputated and the adenoid tissue more or less completely removed. The operation was done quickly with little regard for thoroughness and the results were frequently unsatisfactory. The child was kept quiet for a day or two and the whole procedure was regarded rather lightly.

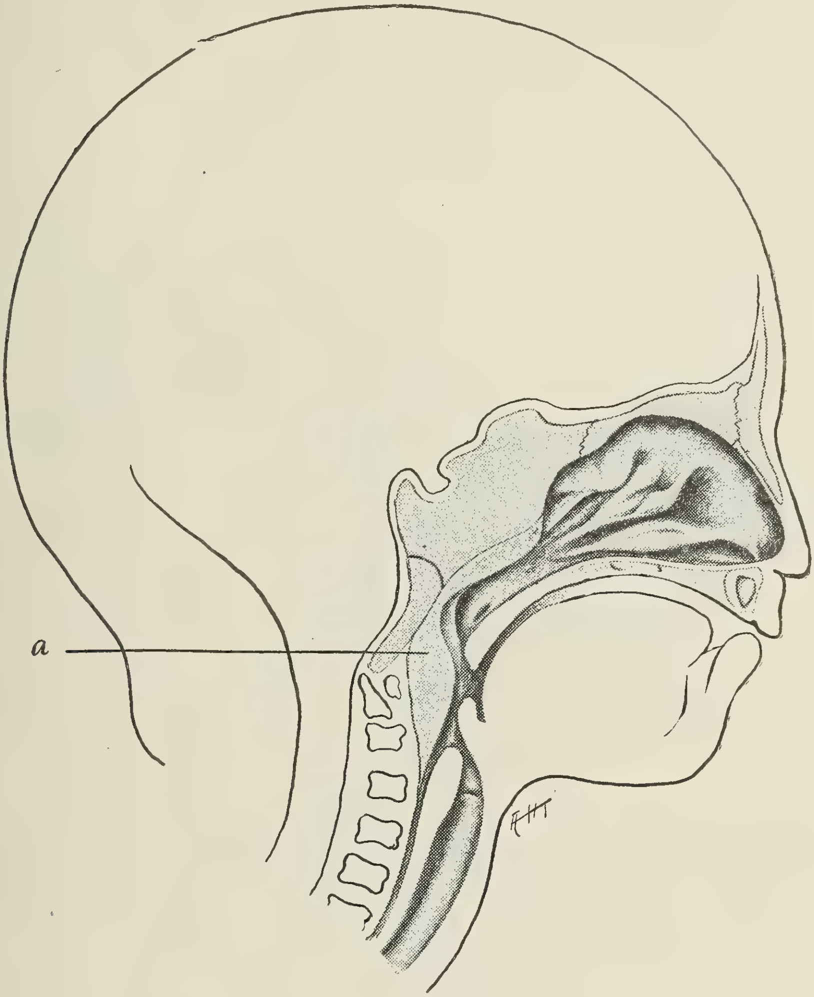

Figure 1.

Longitudinal section showing the left nasal fossa, nasopharynx and larynx of a six months' fetus. (a) Adenoid tissue located relatively low down so that its inferior border is below the opening of the larynx. The rather long tube-like structure of the nasopharynx shows distinctly and the opening of the Eustachian tube can be seen just above the free border of the soft palate. The turbinal bones all show distinctly. Four ethmoidal turbinates can be seen.

The consensus of opinion of laryngologists in regard to the method of operation upon the faucial tonsils has changed very much during the past few years and now the complete enucleation of the tonsil with its capsule is considered by far the best operation.

The thorough removal of all of the adenoid tissue in the nasopharynx and the fossæ of Rosenmueller is done after the enucleation of the tonsils and the whole operation is more radical than it was formerly and is necessarily attended by more shock and systemic depression. The care of a child after such an operation is therefore of great importance and explicit instructions should be given to the parents or nurse in order that unpleasant complications may be avoided and that the child may receive the proper attention.

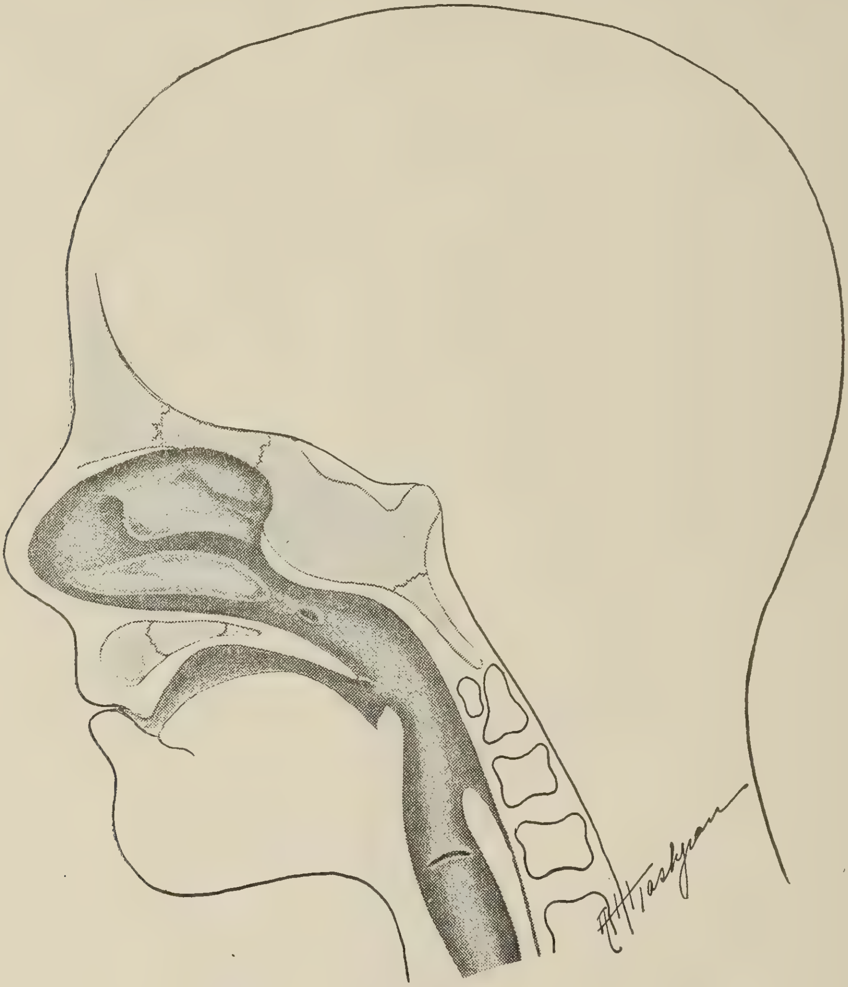

Figure 2.

Section showing the right nasal fossa and pharynx of a fetus about eight months old. In this specimen only two ethmoidal turbinates are present; the nasopharynx is free from adenoid tissue; the elliptical opening of the Eustachian tube is nearly parallel with the floor of the nose. There is no hypertrophied adenoid tissue and the nasopharyngeal wall is comparatively smooth.

The author does his operative work in the afternoon and the instructions for the preparation of the patient and the care of the patient after the operation, were arranged with this time in view. A printed copy of the following directions is given to the parents at the time that the appointment for the operation is made so that they may have definite instructions to which they can refer at any time.

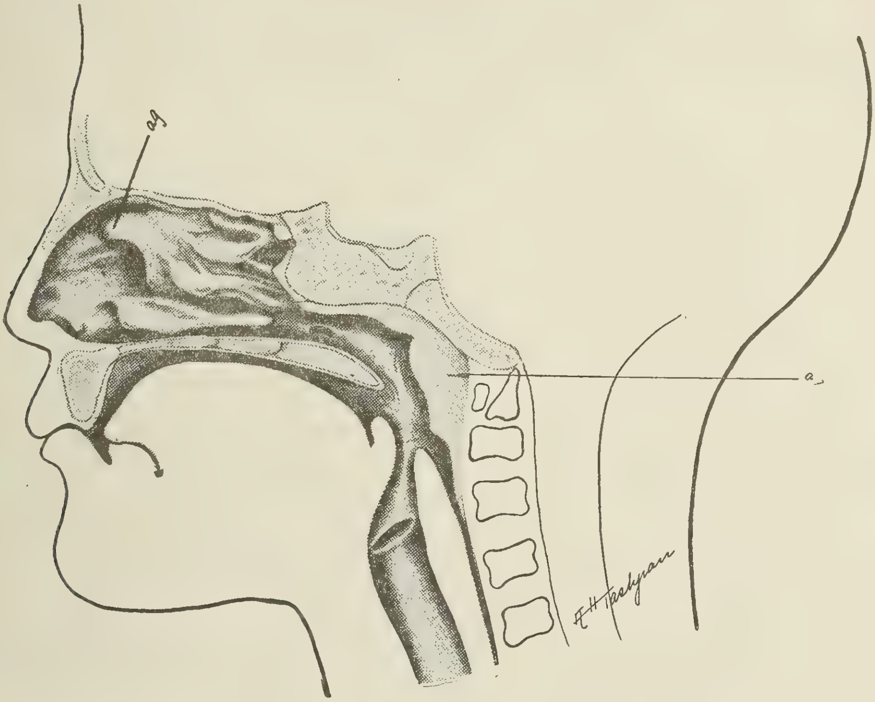

Figure 3.

Longitudinal section, showing the right nasal fossa, nasopharynx, pharynx and larynx of a child about six months old. The outline of the maxillary turbinate is about the same as in an adult. Four ethmoidal turbinates can be seen. The agger nasi shows distinctly as a rounded process extending forward from the anterior part of the ethmoidal turbinate. A small diverticulum extending into the sphenoid bone shows the beginning of the formation of the sphenoidal sinus. The long axis of the Eustachian tube is nearly parallel with the floor of the nose. The nasopharynx contains a rather large mass of adenoid tissue, which extends down below the opening of the larynx. The tongue is relatively thin posteriorly. The larynx is relatively high. (ag) Agger nasi; (a) adenoid tissue.

Preparation for the Operation.

In order that the operation may be painless, it will be necessary to administer an anesthetic (ether). These directions must be most carefully followed so that the anesthetic may be safely given.

1. The evening before the operation, give two teaspoonfuls of castor oil, or any other good cathartic.

2. On the morning of the operation, the child should have a light breakfast (one soft egg, bread and milk) at eight o'clock.

3. After this light breakfast, food of all kind, milk included, should be absolutely prohibited. The child may have water to drink during the morning, but after twelve o'clock not even water. He should be watched to see that he does not get food without your knowledge.

The room in which the operation is to be performed should be on the same floor on which the child is to be put to bed, and the temperature of the room should be 76° to 80° F. An open fire, such as a grate, must not be allowed to burn in the room while the anesthetic is being given. There should be one good, bright window from which all lace curtains have been removed.

Have ready in the room the following articles:

1 Kitchen table
1 Blanket
3 Sheets
8 Towels
1 Large bath towel
6 Napkins
1 Large granite basin
1 Flat saucer or pus-basin
12 Or more newspapers
2 Small stands or chairs
1 Thermometer

Care of the Patient after the Operation.

1. The child must remain in bed until the third morning after the operation. Only one person should be with him and the room should be kept as quiet as possible.

2. At six p. m. if he complains of thirst and has not vomited for one hour, cold water may be given, a teaspoonful at a time, at five minute intervals. If no vomiting follows the first doses, the amount may be gradually increased. Vomiting of blood once or twice does not indicate hemorrhage. It is simply the blood which the child has swallowed immediately after the operation.

3. Food: Do not ask the child if he is hungry. It is not necessary for him to have food until the following day. If he complains of hunger and has not vomited for two hours, teaspoonful doses of cold milk may be given at intervals after seven p. m. and the amount gradually increased, if there is no vomiting.

4. The third day following the operation, if there is no fever, the child may be up and about the house, but should not run and play. His diet for the first day should be liquid, water freely, milk, soups and ice-cream. Eggs, custards, milk-toast

and soft foods should be given on the second and third days. As the soreness decreases, the usual diet may be gradually resumed. On the third day after the operation, he may be taken out of doors if the weather is favorable.

5. Soon after the operation, there may be pain in one or both ears. To relieve this, hot applications (hot water-bottle, hot flannels, etc.,) or cold (ice bag) may be used.

The kitchen table covered with a blanket and a sheet is used as an operating table and the child with its night clothes on is wrapped in a sheet. The newspapers are spread on the floor at the head of the table to catch the blood. The saucer is used as a pus-basin if the child vomits.

After the operation the child is placed in bed. The liability of hemorrhage and of some infection makes it advisable to keep the child in bed for three days. Considerable hemorrhage at the time of the operation is to be expected. If the hemorrhage does not cease promptly, a gauze sponge is wrapped around the finger and, with the finger in the mouth, firm pressure is exerted over the site of the operation. In the cases in which pressure does not control the hemorrhage, and fortunately such cases are not common, the bleeding points should be searched for and grasped with artery forceps and twisted or tied. Secondary hemorrhage, which may occur any time within a week after the operation, should be treated in the same way.

Gargles and sprays should not be used. The act of gargling brings into play the muscles which are inflamed and which should be kept at rest; and then, too, it may also dislodge the clot and cause hemorrhage. Sprays also, particularly if they are applied with much force, may loosen the clot. The mouth should be kept as clean as possible by the frequent use of an alkaline mouth-wash (not a gargle) and the usual cleansing of the teeth after eating.

There is always some rise of temperature after the operation and the child should be kept in bed until the temperature remains normal for 24 hours.

After an adenotomy alone there is frequently very little soreness, but when the tonsils have been enucleated the throat is decidedly sore for several days or even a week. Cold applications externally and pieces of ice in the mouth relieve the soreness very much. The ice should be held in the mouth until it melts and then expectorated so as to avoid the pain caused by swallowing.

Liquid diet should be given during the first day after the operation and then a soft diet until the soreness disappears. Soft foods can usually be swallowed with less pain than liquids alone, for the bolus of the soft food prevents the muscles of the pharynx from contracting as tightly as they do when liquids are swallowed.

Pain in the ear is due, of course, to inflammation in and around the Eustachian tube. In spite of every precaution the ear may become infected and it should be treated then in the same manner as any infection of the ear. Hot or cold applications are used externally to relieve the pain but if these are not successful it is probably because there is fluid in the middle ear. If there is fluid in the ear an incision should be made in the posterior inferior part of the drum-membrane to provide drainage and relieve the tension.

Children who have been unable to breathe through their noses on account of the obstruction in the pharynx or nasopharynx may continue to breathe through the mouth after the obstruction has been removed and in such cases the mother is instructed to constantly remind the child that he must breathe with the mouth closed and thus establish the habit of nasal breathing.

318 Euclid Ave.

Normal Saline Solution as a Dressing in Casualty Surgery

By G. E. FOLLANSBEE, M. D., Consulting Surgeon, St. Alexis Hospital; Visiting Surgeon, Woodhill General Hospital, Cleveland.

In a rather extended practise in casualty surgery the fact that a large proportion of the disability following accidents is due not to trauma and its effects *per se,* but to the introduction of pathogenic bacteria, either at the time of the injury or during its subsequent care, has been thoroughly impressed upon me. In other words, if infection could be prevented, the total number of days lost by reason of accidents by a force of employees, the total amount paid by the employing company as benefits for these non-productive days of injured workmen, the number and therefore the expense of dressings by the surgeon, the amount and severity of the pain suffered by the injured em-

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Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, March 4, 1910.

ployee, the deprivation of the injured employee's family, and the loss to the business community through idleness of the worker, would be materially reduced. In an endeavor to lessen this amount of infection, various methods of cleaning injured members and various antiseptic solutions have been tried in turn. Some improvement was noted, but this was due, I believe, not to the kind of antiseptic solution used, but to the manner of cleaning and the degree of cleanliness, as distinguished from sterility, obtained. After trying various antiseptics the conclusion was finally made that bichlorid of mercury solution possesed all the desirable features that any other antiseptic had, and was not objectionable in the ways that some of the others were. Some time after bichlorid was accepted as the routine antiseptic for cuts, lacerations and crushing injuries, improvement was made in the method of cleaning. The technic of caring for these injuries finally reduced itself to the following routine. The part surrounding the injury is thoroughly scrubbed with tincture of green soap, stiff brush and warm water until clean. This usually takes two or three successive scrubbings and rinsings. During this process care is taken not to introduce the stiff bristles into the wound but to get close to the edge of it. The cut, laceration, or crush, if dirty, is then gently cleaned with gauze and the loose particles of foreign matter or separated tissue picked out. Blood, clotted and fresh, is gently wiped away with gauze or irrigated away with normal saline solution or 1-2000 bichlorid. Previous to Nov. 10, 1907, I used bichlorid solution; since that date for the injuries under consideration I have used normal saline solution. After this cleansing the necessary trimming is done and the wound dressed with plain gauze and cotton. It is essential to clean the member very wide of the injury, for in the necessary handling to apply the dressings the hands of the surgeon or the dressings are likely to touch some uncleaned part and introduce infection: for instance, if a finger or toe is lacerated the whole hand or foot is thoroughly scrubbed. This takes very little extra time, and the efforts pay. I desire to compare the results in 1,000 consecutive cases of cuts, lacerations and crushing injuries occurring in my practise immediately previous to Nov. 10, 1907. with 1,000 consecutive cases of the same nature occurring immediately following. Absolutely no selection has been made in either series except that the cut, laceration or crush should be the essential injury. This much selection is necessary, for the primary purpose of the paper is to compare periods of disability for the two series, and it would be manifestly incorrect to include, for instance, a case in which there was a slightly lacerated finger and a broken arm in the same patient: the laceration might keep the man away from work a day or two, but the fracture would keep him from work eight or ten weeks. Cases of compound comminuted fractures of large joints are not included even though the limb was saved, for the disability suffered was not confined to the time necessary to heal the lesion but to the ankylosis or deformity which remained after the healing process was complete. The disability due to the healing process in cases such as these, if of value to the purpose of the paper, would have to be estimated, and it seems better not to include any case in which an estimate has to be made, but to include only the disability as it actually occurred. Both series include every cut, laceration and crush which came under my care during the period of time covered, no matter how trivial or how severe, provided the cut, laceration or crush was the essential injury. The routine of care was the same in both series except that in the series previous to Nov. 10, 1907, 1-2000 bichlorid was used in cleaning and dressing, and in the series subsequent to Nov. 10, 1907, normal saline was used in like manner.

The total number of days' disability in the bichlorid series is 9,875, distributed among 446 men. After their injuries were dressed 554 men returned to work and lost no time. This gives an average of 22 1-7 days' disability for each man laid up. The total number of days' disability in the saline series is 7,541 distributed among 433 men, an average of 17.21 days each. To reduce it to percentages there was 27.1% more disability among the men disabled who were treated antiseptically than among those treated physiologically. The total number of dressings in the bichlorid series was 7,165; in the saline 5,521, a saving in favor of the saline of 1,644. To speak in percentages, cases treated antiseptically require 29.7% more dressing than those treated physiologically. Assuming the average value of an injured man's time to be $2.00 per day, the 446 men who lost time under antiseptic treatment lost $19,750.00, or $44.28 each. The 433 men who lost time under physiological treatment lost $15,082.00, or $34.83 each. The money value of the time saved is perhaps the least satisfactory of the improvements gained. As will be seen from the cases to be noted presently, the instances of prolonged disability, of deformity and death due to infection in the series treated antiseptically were much in excess of those in the series treated physiologically. The number of secondary operations such as amputations and opening infections became noticeably less, although I have successfully attempted to save crushed fingers and toes that under the usual antiseptic treatment, I believe, would have been lost. The number of cases which healed by primary union even in lacerations and crushes was markedly increased, though my records are not sufficiently minute for me to venture on percentages. I will not go into detail in any other class of cases but will only mention that I find it a most satisfactory dressing whenever it is desirable to promote healing in open wounds such as burns, ulcers, abscesses after wide incision, skin-grafts, etc. The manner of using is to keep the dressing saturated, preferably by dipping the injured part into a bowl of the solution. As the water evaporates from the dressing the salt is left, and if it is continually dipped and dried there is a great excess of salt which is liable to cause a dermatitis and to interrupt healing. To avoid this it is only necessary to direct the patient to use pure water alternately with the solution.

In the 1,000 cases of the bichlorid series there were 21 cases in which, on account of infection which developed, the period of disability suffered by the men was materially increased over what it should have been had no infection taken place, and in several cases deformity in the way of contractures or of loss of members resulted. There were also two cases of death following infection. Among these cases I will call your attention to the following, viz.:

No. 9250. F. D., age 29, a strong healthy young man of good family, sustained a deep laceration and a fracture of the middle phalanx of the right little finger on December 9, 1905. Great care was taken to thoroughly cleanse and make aseptic this wound, I personally attending to it, as he was a particular friend of mine. The finger became infected, and the man went from bad to worse, until finally he died from septic pneumonia on January 9, 1906, 40 days after receipt of his injury.

No. 9426. V. B., age 25, on January 24, 1906, sustained a laceration of all four fingers of the left hand by a window falling upon them. This man's wounds were dressed with bichlorid solution 1-1000, but in spite of this there was some infection, and the man took it upon himself to use a solution of carbolic acid. As nearly as can be determined from what he said the solution was about two percent. Gangrene was added to his infective trouble, and on February 3, 10 days after the accident, the second, third and fourth fingers were amputated. Normal saline solution would have never caused this gangrene.

No. 9733. F. G., age 25, had the end of his right toe crushed on March 31, 1906. Nail was removed and bichlorid dressing applied. Estimated period of disability was three to four weeks. Instead of this, on account of infection, he was under my care continuously for four months, at which time my notes show that he was directed to go to the hospital to continue his treatment, but he refused to go and passed from my observation.

No. 10329. J. B., age 50, was struck on the head by a piece of iron and sustained a four-inch scalp-wound on July 10, 1906. After thoroughly shaving, scrubbing and using 1-1000 bichlorid solution on the head the edges of the wound were approximated by two sutures. Probable disability was stated as one to two weeks. Severe infection developed, which required his removal to the hospital seven days after the accident, where he stayed two weeks. He was under my care continuously for 11 weeks instead of the two weeks as estimated.

No. 12216. A. B., age 25, on May 24, 1907, had his left little finger crushed while coupling cars. The finger was amputated at the middle of the first phalanx and the probable disability was reported to be six to eight weeks. On account of infection extending into the palm of the hand across to the thumb and into the forearm, it became necessary to incise the parts on May 28, June 1 and June 5. He was very near to death from septic poisoning, and it was thought for some time that it would be necessary to remove his arm. This, however, was not done. The infection caused contracture of the muscles and fascia of the forearm and hand, leaving the member in a crippled condition. He was under my care from May 24, 1907, to March 25, 1908, a period of 10 months, all due, I believe, to a too free use of the stiff scrubbing brush and strong antiseptic solutions.

No. 10379. F. J., age 46, on July 18, 1906, had his finger crushed by a falling timber, necessitating amputation at the last articulation. The history of this case is very similar to the preceding one, although the result was not nearly so bad, it leaving him only with a stiff middle finger which, however, prevented flexion in the other fingers. It was expected that his disability would be three or four weeks, but instead of this he was under my care for four months, and did not again return to work.

No. 11054. S. P., age 38, on October 25, 1906, had a piece of scrap iron fall upon his head. There was a bruise and laceration of such severity as to make the probable length of disability from two to three weeks. Infection took place and eight days after the injury it was necessary to send him to the hospital and open the infected hand, necessitating a stay in the hospital of four days. On November 22, 28 days after the injury, it was necessary to again put him in the hospital and open the hand, requiring a stay in the hospital of seven days. He returned to work on December 27, 63 days after his injury, and was discharged from my care six days later. Period of disability in this case was, on account of infection, lengthened from a maximum probable disability of 21 days to an actual disability of 53 days.

No. 11117. T. G., age 42, on November 6, 1906, was making a cut between two cars and his fingers were pinched in the coupling. The first finger was crushed so that it required amputation at the middle of the first phalanx and the second finger was lacerated and the first phalanx fractured. The two fingers were dressed antiseptically and the period of probable disability, as given in my report, was six to eight weeks. He remained in the hospital after the operation for six days. On the last day of his stay I amputated the second finger on account of infection, and the two stumps were badly infected when he left there. It became necessary for him to return to the hospital on November 22, 16 days after his injury, for incision of the hand. From this time on the hand was dressed every day or two until his discharge on February 13, a period of disability of 99 days instead of the estimated maximum disability of 56 days.

No. 11278. J. W., age 35, a tresspasser on the railroad, on December 5, 1906, was standing between two cars urinating, when the cars backed down on him. He sustained a severe laceration about six inches in length on the anterior surface of the right leg. The anterior tibial muscle was torn from the lower third of its origin. The foot was badly bruised, and there was a punctured wound on the dorsum of the foot and on the inner side of the leg above the ankle. The leg was thoroughly cleaned with soap and water and 1-1000 bichlorid solution. The muscles, fascia and skin were sutured, drainage was inserted and nails were removed from the bruised toes. He remained under my care until December 21, at which time I was directed by the railroad authorities to discontinue caring for him, and he passed into the hands of other surgeons. His condition at that time was very good, and while there was some infection, it did not appear to be bad. Eight days later the man died from a very severe infection of the whole extremity.

No. 11937. M. G., age 59, was struck on the right shin by a piece of scrap iron on April 8, 1907. The injury was not so severe as to lay him up, and he was sent back to work after the usual careful antiseptic dressing. He returned two days later with a severe infection in the subcutaneous tissues, and on April 11, three days after his injury, he was sent to the hospital. On April 14, six days after his injury, a phlegmon consisting of the whole subcutaneous tissue covering the anterior surface of the leg was removed. He remained in the hospital 74 days and did not return to work until July 15, 98 days from the time of his injury.

In the saline series there was but one case in which the disability was unduly prolonged.

This man on account of infection lost his first left finger, and was under my care and away from his work 14 weeks. The period of his probable disability was estimated at the time of his accident as six to eight weeks.

As showing the contrast in results obtained under our present method of carefulness and gentleness in cleansing the wound on the surface and of not devitalizing the injured tissues by strong antiseptics, I desire to cite three representative cases. These could be multiplied out of the saline series if any advantage were to be gained.

No. 13920. J. J., age 27, on April 11, 1908, was caught by his hand-leather and thrown violently around and around by the wire-drawing block on which he was working. He was generally bruised about both legs and thighs, the right knee had been bent outward, rupturing the external lateral ligaments of the knee-joint completely, and tearing out the semilunar cartilage; also rupturing the peroneal nerve, tearing the biceps femoris tendon from the head of the fibula, tearing the gastrocnemius muscles in two, fracturing the fibula in its upper third and dislocating the head of the fibula forward. The leg about the wound was thoroughly scrubbed with tincture of green soap and water, and the wound and leg irrigated with normal saline solution. No bichlorid or other antiseptic was used at any time. The external lateral ligament was sutured, the biceps tendon was sutured to the head of the fibula, the dislocation reduced and sutured into place, the peroneal nerve was grafted into the anterior popliteal, the wound was drained, dressed and put into a plaster cast. There was no infection, the wound healing by first intention, and he was up and about 13 days following his accident, walking about the ward with crutches. From that time on passive motion, massage and electricity were used, and he returned to work on November 2, not quite seven months from the time of his injury. At this time there was a slight return of motion in the parts supplied by the peroneal nerve.

No. 13930. S. B., age 24, on April 14, 1908, had his left hand caught between a ladle and a crane-hook. He sustained severe lacerations on the palm and back of the left hand. The hand was burst open along the ulnar border and along the first finger, the soft tissues on both the palm and back were torn loose from the bones so that it was possible to thrust a finger between the bones and soft tissues. The probable disability in this case was stated at the time of injury to be three to four months. The usual method of cleaning with soap and normal saline solution was used, and the hand was dressed and kept wet with normal saline solution. A slight infection developed, which necessitated an incision of the palm on May 11, 27 days after the receipt of injury. It promptly subsided, and he was discharged from my care and returned to work on June 22, two and a half months from the time of his injury with no disability remaining.

No. 13931. L. A., age 42, on April 15, 1908, had the lower two-thirds of his right forearm and his left hand and fingers crushed. The forearm was amputated three inches from the elbow and the left hand was amputated through the metacarpal bones, leaving the last finger and thumb on the stump. The tissues in this hand were very badly crushed, and it was considered doubtful whether the finger could be saved. My report made at the time of the accident reads: "Will be under treatment four or five months, left little finger may require amputation later." No infection developed in this case, and the stump of the left hand was skin-grafted on April 22, seven days after the accident occured, and he was discharged from my care completely healed on July 27, not quite 15 weeks after receipt of his injury.

It is unnecessary to detail any further cases to illusrate the point.

314 New England Bldg.

Clinical Observations on Transfusion.

By H. G. SLOAN, M. D., Cleveland.

The principal use of the direct transfusion of blood is in the treatment of severe hemorrhage and of shock, but it finds also a sphere of added usefulness in the preparation for a severe operation of a debilitated patient as well as in the treatment of carbon monoxid poisoning.

When the practise was first introduced, there existed a fear of possible hemolysis in the person receiving the blood. In normal subjects we no longer fear this factor, for Dr Crile has, in a series of some 800 tests in normal cases, found no hemolysis. It is not at all necessary that the donor and recipient be blood-relatives.

In hemorrhage the danger point lies in the resulting anemia of the vital centers in the medulla. Judgment as to the near approach of this condition is very difficult even in normal subjects, but especially is it difficult in typhoid hemorrhage when the central nervous system has been damaged by toxins. Another factor bearing on our subject is the loss of power, and the consequent dilation of the heart from anemia. Such dilation sometimes occurs when saline is used intravenously in the treatment of hemorrhage, and also in blood-transfusion when too large a

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Read before the Academy of Medicine of Cleveland, February 18, 1910.

stream is passing over into the recipient's veins. Heart-muscle damaged by toxins or anemia is especially liable to give way: here digitalis can be used to advantage. Acute cardiac dilation is recognized clinically by the slight cyanosis, urgent dyspnea with very rapid, feeble pulse, and on percussion the enlarged cardiac dulness, principally to the right. What has happened is this: fluid has been too rapidly infused into the vein thereby rapidly increasing the volume of the heart's work at a time when the functional power of the muscle is already much diminished.

Clinically, we may recognize a progressive hemorrhage by the pinched expression of the patient's face. This, on being analyzed, resolves itself into the deepening of the lines of expression, that is the nasolabial folds, and the sinking in of the eyeballs as shown by the greater prominence of the orbital bony ring below the eye. The normal flesh-tint pales. This is seen best on inspecting the prominent features, i. e., ears, cheek-bones, lips and nose. The sharp demarcation of the vermilion lip-border from the adjacent skin surface is less defined. I know of no closer resemblance to the picture than the facial appearance of one who has lost a night's sleep especially if combined with worry or fatigue. The pulse-volume gradually diminishes as the rate increases until we have the small thready pulse which taps sharply on the palpating finger. A deep sigh may be the first respiratory sign of blood-loss while later on we see the rapid breathing of air-hunger. Cold sweat stands out over the forehead. The higher faculties are blunted, and the patient is the subject of unexpressed anxiety. He is often restless, tossing about on the bed. There is an immediate rise in the leukocyte count commensurate with the amount of blood lost and, if sufficient time has elapsed for the blood-volume to be diluted, by the body-fluids, there will be a fall in the hemoglobin-reading. The temperature always drops. In a concealed hemorrhage in the abdomen, the less resonant note obtained by percussion over one of the iliac crests may aid in the diagnosis.

All cases do not show similar signs and symptoms but in each the degree is measured for the most part by the severity of the hemorrhage so that the earlier a diagnosis is made the more difficult is the judgment. But, on the other hand, a man may bleed a full-headed stream from his radial artery for half an hour, or even longer, without showing any change in his pulse-rate or evidence of blood-loss, except a slight pallor and lessened pulse-volume. The vasomotors are in the meantime clamping the vessels down tighter and tighter on the lessening volume of blood, when quite suddenly they give up their unequal task, the blood-pressure then drops sharply and the patient is in immediate and grave danger.

The amount of blood that a person can lose at one time and recover is of purely academic interest, for a hemorrhage that will kill one individual will only weaken another, so that each case must be judged by itself. Children and the aged bear blood-loss poorly, women better than men, spare subjects better than fat. Most cases require only bandaging the lower half of the body, lowering the head and giving saline. Saline quickly leaks through the vessel walls and accumulates in the walls and lumina of the hollow viscera whereas blood remains in the vessels.

If, on bandaging, lowering the head and giving saline, the pulse-rate remains constant or falls, we may be moderately sure there will be no need of new blood. But if these procedures have been tried and the pulse-rate continues to rise or is very weak or respiration becomes feeble, then we must resort to transfusion. With a pulse-rate of 140, due to hemorrhage, in a slender woman we begin to feel anxious, in a man we are anxious, while in an old man with thickened arteries, we are very anxious indeed. In doubtful cases, provided there is much manipulation necessary to stop the hemorrhage, a donor should by all means be connected with the patient before proceeding further. One dislikes to resort to heroic means unless it is necessary, but I wish to emphasize the point that an indicated transfusion must not be deferred through indecision too long. One minute may cost a patient's life.

I might cite cases illustrating each point brought out but I will present only a selected few of the most characteristic. It is through the kindness of Dr Crile that I am able to report the following case which occurred in his service at Lakeside Hospital while I was resident there.

Mrs. B., age 43, had uterine myomata with pregnancy. Three myomata were shelled out of the uterus and the abdomen closed. Six hours later, at 5 p. m., she had a copious hemorrhage from the vagina but no fetus or placental remains were found. She continued to lose blood during the evening. At 11p. m. the interne in charge of the ward became anxious about her condition, as her pulse rate had reached 140 and she looked very pale. During the next 10 minutes she grew markedly worse, the pulse-rate reaching 180. She was turned across the bed, given a few whiffs of ether and the vagina cleared of clots. Blood was found oozing from the cervix through which the placenta presented. This was delivered and the uterus packed. Respiration failed and artificial respiration was given. The patient was quickly placed in a head-down posture at an angle of 45°. The lower half of the body was tightly bandaged from the feet upward over massive layers of rough cotton. The pulsation of the carotid could now barely be felt. Next a vein in her forearm was opened and a quantity of 1-50,000 salin-adrenalin solution was introduced. Spontaneous respiration now appeared. After 300 c. c. of the solution had entered the circulation, respirations became rapid and the pulse, which had become stronger, suddenly became very feeble and so rapid that it was uncountable. Percussion of the chest showed an increase of heart-dulness to the right of the sternum. Recognizing an acute cardiac dilation, we tipped the patient up the other way and stopped the intravenous injection of saline. The heart quickly righted itself and we were able gradually to lower the patient to the head-down posture again. It was possible to maintain the circulation by letting 10 c. c. of the solution run into the vein every five minutes. This effect was transient and at the end of another five minutes had to be repeated. When half an hour had elapsed, her brother arrived on the scene and we at once connected his radial artery with the patient's medianbasilic vein. She gradually came out of her stupor and at the end of 40 minutes the pulse was 110, of good volume and the patient showed as good color as the day she entered the hospital. Recovery was uneventful and she left the hospital in two weeks.

In shock we have a picture which is at times almost impossible to distinguish from hemorrhage. In fact, it is an intravascular bleeding, the larger vessels dilating and holding a large percent of the blood, whereas in pure hemorrhage the blood-loss is outside the vessels. Crile and Dolley have shown that in shock the ganglion cells of the central nervous system show marked morphologic changes.

The object in the treatment of shock is to give the damaged cells complete rest and plenty of nourishing blood until nature heals their injury; that is, providing the damage is not lethal. The same principles apply in the treatment of both shock and hemorrhage, viz.: Rest and quiet under morphia. The shunting of the lessened circulating blood volume from the extremities (the legs can well stand an anemia several hours while the brain can endure total anemia only six or seven minutes), into that part of the circulation which supplies the heart and central nervous system; this we do by bandaging the lower half of the body. Further, the volume of circulating fluid may be increased with advantage by saline infusion. Advantage is also taken of hydrostatic pressure by lowering the patient's head. There is a large group of cases which, in spite of these measures, grow surely and steadily worse, but we are able to save the vast majority of even these. The lack of tone of the vasomotors ushering in the vicious circle of lowered blood-pressure in the brain is the condition to be combatted. As I have said before, saline will not remain in the vessels but leaks through and accumulates in the walls of the gastro-intestinal tract; so that in these severe cases saline is an inadequate remedy. New blood pumped into the vessels remains permanently. The following is an example of the life-saving action of transfusion in shock:

Case 76, age 29, had his left arm amputated at the shoulder-joint following an accident in which the whole arm had been crushed by a cog-wheel. In reporting this case, I am also indebted to Dr Crile, in whose service at Lakeside Hospital it occurred. On removing him to the ward, the usual treatment was carried out—i. e., morphin, bandaging of the lower half of the body, raising the foot of the bed and saline infusions; but in spite of this his condition grew rapidly worse, pulse 156 and barely perceptible at the wrist, blood-pressure 90 mm. Hg. He was transfused for 35 minutes from a sturdy donor and the result was rather remarkable. First, the color slowly returned to his face, the cold perspiration ceased, his mind became clear and he became jocose. The condition of the circulation gradually improved; the volume of the pulse rose, returning to normal and falling in rate to 110; the blood-pressure rose to 128 mm. Hg. The next day he was able to sit up in bed.

In transfusing debilitated patients, in order to prepare them for operation, one must see the procedure in order to appreciate its value. Patients, whom we recognize as unable to survive the shock of a transient operation, come through the ordeal in much better condition than when they entered the operating room. I have in mind several bad cases of tuberculous peritonitis, in which it was necessary to remove the primary focus. Also those cases of palliative gastro-enterostomy when the patient is almost starved by carcinoma obstructing the pylorus and causing vomiting.

To sum up, transfusion has proved a very valuable adjunct to the management of the more difficult surgical risks which we encounter in hemorrhage, in shock, and in patients weakened by prolonged sickness. The technic of the vessel-anastomosis is not difficult if certain principles are remembered. Local anesthesia is best obtained if one works in the cocain by massage after making superficial as well as deep injections over the vessel. Gentle handling is an important factor. Lubricating the vessel facilitates dilating the artery with a hemostat; the vaselin also makes it slip over the cuffed-back vein easier. A little tension on the connection or a twist in the vein stops the flow.

In an emergency when there is no cannula at hand, one can easily be made by pulling out a glass tube in the flame and then paraffining it to prevent clotting. The following is such an example:

Case No. 103 sustained a crush of both thighs and the right hand. When seen seven hours after the accident, he was in profound shock, the pulse 170 and not palpable at the wrist. We were able to transfuse him with the aid of such a cannula and then amputate both thighs under spinal anesthesia. At the end of the operation his pulse rate was 120.

222 Osborn Bldg.

Review of the Progress in Surgery.

Conducted by C. A. HAMANN, M. D., Cleveland.

1. Disinfection of the Hands and Field of Operation—Grekow. Pfisterer.
2. Operative Treatment of Gastric Crises—Foerster and Kuettner.
3. Treatment of Spastic Paralysis by Section of Posterior Nerve-Roots—Foerster.
4. Postoperative Sequelae in Cases of Appendicitis—Jerusalem.
5. Brief Confinement of Laparotomy Cases in Bed—Hartog.
6. Treatment of Diabetic Gangrene with Hot Air—Recard.
7. New Method of Opening the Skull—Hudson.
8. A Disease of the Gall-Bladder requiring Cholecystectomy—Moynihan.

DISINFECTION OF THE HANDS AND FIELD OF OPERATION.

Simplification of the methods of cleansing the skin has been aimed at in several clinics of late. Grekow *(Arch. f. Klin. Chir.,* Bd. XC, Hft. 4.) recommends the following procedure: After a few moments of cleansing of the hands with soap and water without a brush, they are rubbed for five minutes with gauze or cotton dipped in 96% denaturized alcohol and then dried. The skin of the patient, who has had a tub-bath on the previous day, is also rubbed with alcohol in the same manner, and then tincture of iodin is applied over the field of operation. The principle of the plan is to "tan" the skin and to "fix" the microorganisms. Excellent results are reported.

Pfisterer *(Zeitschr. f. Geburtshulfe u. Gynakol.,* Bd. LXIII, Hft. 3.) has investigated bacteriologically the plan of cleansing the hands with a mixture of 99 parts of 95% alcohol and one part of formalin. The results, in a general way, show that this plan is unsatisfactory, if preliminary cleansing with soap and water is omitted. It seems to us that the methods in general use, in this country at least, and the wearing of rubber gloves have satisfactorily settled the problem of hand-disinfection and so-called simpler methods, with a view to save time, are quite unsafe and unjustifiable.

OPERATIVE TREATMENT OF GASTRIC CRISES.

Foerster and Kuettner *(Beitr. zur Klin. Chir.,* Bd. LXIII, Hft. 2.) furnish an interesting and important contribution to the surgery of the nervous system. They regard all tabetic crises as having evidences of sensory, motor and secretory irritation, of which the sensory are primary; in gastric crises for instance the severe pain is an evidence of sensory irritation, the vomiting and singultus of motor irritation and the hypersecretion of the mucosa of secretory irritation.

They assert upon apparent good proof, that gastric crises are to be attributed to irritation of the sympathetic fibers entering the posterior roots of the seventh to ninth or tenth dorsal nerves.

One case is reported: A man 47 years of age, who had been suffering for six years with severe and increasing gastric crises and had become greatly emaciated and addicted to large doses of morphin, was operated upon. At the first operation the laminae of the fifth to the tenth dorsal vertebrae were removed; 12 days later, a portion of the posterior roots of the seventh to the tenth dorsal nerves on each side was removed, and the wound closed in the usual manner. The result was surprising. All pain and nausea had disappeared and the patient's appetite returned. Four months later the patient was still gaining in weight and had no return of his gastric crises.

The authors recommend that the above-described operation be advised in cases of severe gastric crises which can not be controlled in any other way and when the dangers of starvation, morphinism, etc., are impending.

TREATMENT OF SPASTIC PARALYSIS BY SECTION OF POSTERIOR NERVE-ROOTS.

Foerster (*Mitth. aus d. Grenzgeb. d. Med. u Chir.*, Bd. XX, Heft 3.) has proposed section of the posterior nerve-roots for spastic paralysis. The pyramidal tracts in the spinal cord, besides serving for the transmission of motor impulses, exert an inhibitory influence in that they lessen the reflex irritability of the cord. If these tracts are interrupted, there will be paralysis and the tendon and skin reflexes will be exaggerated; in addition there are extensive involuntary movements associated with attempts at voluntary motion and spastic contractures. These are all reflex, depending upon sensory irritations in the skin, joints, tendons, muscles and ligaments which are transmitted to the cord along the peripheral nerves and posterior roots, and the cord then responds by motor irritation (contractions) of the muscles. In order to interrupt the reflex path Foerster suggests division of the posterior roots. Tietze, who carried out Foerster's suggestion, operated upon two cases of infantile spastic diplegia, one case of spastic paraplegia due to Pott's disease, one case of hemiplegia and one case of multiple sclerosis. In three cases there was marked improvement, the spasticity having been done away with or at any rate markedly lessened, and voluntary movements could be much better executed; in the case of hemiplegia, the contractures of the arm were lessened, but voluntary motion was not improved. Seemingly the upper extremities are not as susceptible of improvement as the lower.

Tietze advises operating in two stages, the dura being exposed at the first operation and the nerve-roots resected at the second. Secondary operations on the muscles or tendons may be necessary later to relieve joint contractures and shortening of muscles.

POSTOPERATIVE SEQUELAE IN CASES OF APPENDICITIS.

Jerusalem *(Centralblatt f. Chir.,* 1909, No. 48.) refers to the fact that after appendectomy patients not infrequently suffer from pains, which are usually attributed to adhesions. He has seen benefit in such cases from the application of Bier's suction apparatus, applied daily for 10 to 20 minutes. Painful and hard scars are thus made softer and insensitive, and probably peritoneal adhesions are stretched or absorbed; at any rate the discomforts of the patient are frequently much lessened.

BRIEF CONFINEMENT OF LAPAROTOMY CASES IN BED.

The practise of allowing patients who have been subjected to laparotomy to get out of bed in a short time after operation is being advocated by numerous operators.

Hartog (*Berliner Klin. Wochenschr.,* 1909, No. 11) basing his views on 1200 cases of which 51 were under his own care, says that the dangers of secondary hemorrhage, embolism, separation of the wound-edges and hernia can be avoided if proper methods of incising, suturing and dressing are employed. The advantages are rapid convalescence, lessening of the liability to thrombosis and embolism, avoidance of pulmonary complications and of cystitis and an earlier resumption of peristaltic activity of the intestine.

Of course only patients whose incisions have been entirely closed without drainage and who have no fever are allowed to get up; the patient sits up on the second or third day for an hour or so.

TREATMENT OF DIABETIC GANGRENE WITH HOT AIR.

Recard, *(Bull, et. Mem. de la Soc. de Chir. de Paris,* T. XXXV, pp. 250.) advises the use of an electric hot air apparatus by means of which the limb is subjected to a temperature of from 60° to 700° C. The stream of hot air is directed against the gangrenous part, and thus the tissues are thoroughly dried and in fact charred. Pain must not be caused, for this indicates that the living tissue is being attacked. When the gangrenous tissues have been sterilized, active hyperemia is induced, by means of a blast of air of a temperature of from 60° to 70° C. applied on the margin of the healthy part; the tissues swell, become red, granulations appear and after the necrotic tissue is separated, cicatrization begins. The necessity of a complicated and special apparatus, and the length of time required are evident objections to this plan. He had excellent results in five cases.

NEW METHOD OF OPENING THE SKULL.

W. H. Hudson (*Surg. Gynecol. & Obstet.*, Feb. 1910.) has designed an implement by means of which it is possible to open the skull without exposing the dura to the least danger, inasmuch as the burr automatically stops when the bone is perforated. The first opening is made with a sharp-pointed burr, known as a "spiral perforator," the blades of which are arranged so that when resistance to the progress of the central portion of the burr ceases, they wedge in the bone; thus, the rotation of the implement stops automatically. A projection, about the size of a pin-head is formed on the inner surface of the skull, and the dura is not damaged. A "spiral burr" with a dull center spoken of by Hudson as a "follower," is then used to complete the opening. A hand-brace is used to drive the burrs. After the requisite number of openings have been made, which requires but a brief space of time, they are joined by means of a biting forcep which acts like a reversed shear.

A DISEASE OF THE GALL-BLADDER REQUIRING CHOLECYSTECTOMY.

Moynihan (*Annals of Surgery,* Dec. 1909.) describes a condition of the mucosa of the gall-bladder which he says is not relieved by drainage. Clinically, the symptoms are such as would lead to the diagnosis of gall-stones. Upon exposing the gall-bladder, it may appear quite normal, or there may be thickening of its walls. No stones can be felt free in the gall-bladder. The bile is thick, dark in color and very tenacious. When the mucosa is carefully inspected, it is seen to be studded with numerous fine stones which are lodged in the pits on its reticulated surface; it is impossible to remove them by scraping with a spoon or with gauze. The cystic duct presents no abnormalities. Chronic pancreatitis may exist. In order to cure the condition it is necessary to perform cholecystectomy, and when jaundice has existed drainage of the common duct may be advisable.

Moynihan makes the point that inspection of the mucosa is necessary to recognize the condition and points out that some of the cases of "cholecystitis without stones" that have been unsuccessfully treated by drainage only, may be explained by the existence of this peculiar condition of the mucous membrane.

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So-called Semipermeable Membranes.

At one of the evening meetings of the Chemical Society in Boston in December, a cartoon was projected on the lantern screen representing an *Ionic* column of victory capped with the head of Morse, the famous physical chemist. It represented a monument to the triumph of the ionic theory in physical chemistry. But alas! there was more to the cartoon than this. At the foot of the column, which we must suppose was of wood—a somewhat uncertain material for column construction and surely of no lasting quality—stood a man with an axe diligently hewing at its base. Who was this bold and powerful man whose destructive occupation was beginning to have an impression on the column? Closer scrutiny showed it to be Louis Kahlenberg, Professor of Chemistry in the University of Wisconsin. To everyone present at the meeting, the whole cartoon became immediately full of meaning and significance, but to the great majority of the readers of this magazine, it would have had as little point as a political cartoon of some small European state.

Since chemistry is one of the fundamental sciences upon which accurate medical knowledge depends, the divided opinion in the ranks of the chemists which this cartoon represents, must at least arouse our curiosity as to what it all means. It behooves us to be on the watch lest a part of the foundation work upon which the superstructure of medical knowledge is built, should be in danger of collapse.

During the past two decades, there has been a radical change in the physico-chemical conceptions of the nature of solutions. By the work of Pfeffer, van t' Hof, Ostwald and others, it is believed to have been shown that substances in solution behave in many respects like gases; that is to say, that the molecules of dissolved substance exist in the solution much in the same way that gas molecules would exist supposing that these occupied the same volume as that occupied by the solution and were under the same conditions of temperature. One of the fundamental experiments on which this hypothesis depends is that which demonstrates the existence of a measurable solution, or osmotic, pressure. For this purpose a so-called semipermeable membrane is employed, a membrane which permits of passage through it of the molecules of solvent alone but not of the molecules of dissolved substance. When, therefore, a solution of some substance, such as cane sugar, is placed in contact with one side of such a membrane and water (the dissolving menstruum), on the other side, then will molecules of water diffuse through the membrane into the cane sugar solution thereby increasing its volume, or if this increase of volume be prevented, causing a pressure to be acquired by the fluid. This is the osmotic pressure, the apparatus used for demonstrating it being called an osmometer. It has further been shown, especially by Morse, and his collaborator, Frazer, that, if a perfect semipermeable membrane be used and certain other precautions be taken, the osmotic pressure rises to such a height as would equal the gaseous pressure of the substance in solution supposing this existed as a gas. These facts and conceptions, with many others depending on them, are very generally accepted as established by physical chemists, and physiologists have applied them with extraordinary freedom in the attempt to explain all manner of absorption processes in the animal body.

What Kahlenberg has done is to throw grave doubt on this whole conception. He denies that any such thing as a semi-permeable membrane in the above sense exists. He denies that the pressure recorded by the osmometer is the solution-pressure. He denies that the pressures recorded are any evidence that substances in solution are analogous with gases confined in a limited space. His fundamental experiment is one showing that by the use of a membrane having dissolving powers towards some substance in contact with it, a pressure may be registered in fluid in contact with the other side provided this fluid has also dissolving power towards the substance which the membrane has dissolved. For example, he has shown that if one side of a rubber membrane —for which no sieve-like structure can be conceived—be placed in pyridine (an organic fluid having the property of dissolving rubber, or in other words which rubber can dissolve) and the other side be placed in contact with a pyridine solution of some substance, which does not dissolve in rubber—such as cane sugar —then the pyridine will be taken up by the rubber and be immediately attracted to the pyridine solution, thereby increasing its volume, or, if this increase in volume be prevented, causing a pressure to be created. He has further shown that this pressure may, with certain precautions, be made to mount as high as the pressures observed in the osmometer. That in such a process, there is no question of a sieve-like structure of the membrane permitting only the smaller molecules to diffuse, is further evidenced by the fact that in many cases substances can pass through the membranes which have large molecules (colloids)—but which are more or less soluble both in pyridine and rubber—and on the other hand, some substances with small molecules (crystalloids) may refuse to pass through it. Even for the classical cupric ferrocyanid membrane of the orthodox physical chemist, Kahlenberg has no respect. He argues that this salt has a tendency to absorb water to form a hydrated compound: water is thus absorbed by the membrane from the water in which the osmometer is placed and is then attracted by diffusion into the strong solution inside the osmometer, so that the membrane tends to become dehydrated again, as a consequence of which it takes up more water, and so on, until the strong solution becomes so diluted that it no longer exercises an attractive force on the water absorbed from without by the membrane.

It will be evident that to no other portion of applied physical chemistry can this controversy be of greater importance than to biochemistry. It is unquestionably the case that the conception of a semipermeable membrane has failed of application to many of the processes of absorption in the animal body. Animal membranes, such as the capillary walls, the glomerular epithelium, the intestinal epithelium, etc., have more to do with the diffusion of substances through them than is implied in the conception that they are sieve-like structures. They have discriminative power, they can select some constituents from the fluids in contact with them and refuse others; the former group pass through them, towards the latter they form an effective barrier. J. J. R. M.

Nervous Overstrain in Athletics.

The yearly crusade which singles out football for its especial object of reform has nearly come to an end. How much substantial good will result in amended rules remains to be seen, for even one who has played the game and looks back on it as a valuable experience will admit the existence of certain unnecessary dangers. Apart from these, there is another and more subtle danger, one that is farther-reaching in its effects, yet one that is not generally appreciated properly. This, however, is not limited to football but applies equally to all forms of strenuous and overdone athletics. It is also anatomical, but the changes are not the grosser structural injuries and disturbances, but affect the integrity of that highest element, the nerve cell.

While the purpose of this writing is mainly to indicate the end-result, a brief reference to the more immediate changes will be explanatory. Comparative studies of the reactions of certain nerve cells in muscular exertion, as exhibited by dogs exercised in a treadmill, show a most striking degree of lability in such cells, particularly in the more specialized types. Not only is this manifest in the formation and consumption of the basic chromatin, the Nissl substance, but there results with rapidity, relatively speaking, a succession of changes in size, both of the cell as a whole and in the relation of its constituent elements, the nucleus and plasma. Activity, fatigue and exhaustion, each of these has its equivalent structural changes through which the cell passes. Moreover, as regards the number of cells affected in graded activity, in the cerebellum for example, more and more cells take up the work as its severity increases to replace those which are becoming incapacitated, so that after prolonged activity no cells are to be found anywhere in the organ which are not considerably involved.

One phase of the practical application of this is the light thrown upon overtraining, which may yet in its technical sense come to rest upon a precise anatomical basis. At present, at least, there is a definite indication of the effect of long-continued daily strain which is out of proportion to the power and facilities for recuperation—the nerve cells must take up the work each time with an increasing structural handicap. The generally poor resistance of an individual in such a state to the onslaught of an infection, for example, has a rational basis, for the extra strain on nerve cells, so far as they are involved, is borne by a lowered capacity.

The culmination of this definite process in complete using up of the visible energy-supplying material elaborated by the nucleus in a not inconsiderable proportion of cells after severe strains shows how the cell may actually work itself to death. Collateral evidence in support of this occurrence is accumulating. The comparison of the counts of cells both in old animals and in those recovered from severe functional strains with the number in the young is to the advantage of the latter. Hodge's conception of old age as of the nature of final fatigue with a diminished number of nerve cells is borne out, and functional overactivity has its inevitable outcome in premature old age, fewer cells to fall back on in case of need. Making due allowance for the effect of training, there can be no doubt that every Marathon race, every six-day bicycle race entails its permanent damage in this respect, and renders the individual capable of a fewer number of races each time. These are only conspicuous examples of overstrain in athletics—the same result may be produced in all.

One must rely chiefly upon common sense to leaven the conception. The power of recuperation is too obvious to admit of radical opinions which do not ascribe to it a proper place. But recuperation has its anatomical limits and the inevitableness of cellular activity cannot be disregarded. When our national tendency to make sport an end is considered, the danger in this would seem to outweigh the matter of accidents and injuries with which public opinion is chiefly concerned. D. H. D.

A National Department of Health.

Almost one dares begin to hope that actions and deeds may soon take the place of words and promises. At last the Federal Health Department has passed the nebulous stage of mere mention as a minor matter in political party platforms. A bill for the establishment of such a Department has been offered in the United States Senate by Senator Owen of Oklahoma. Whether we are to have what we ought to have, or whether the measure is to be permitted to go to sleep without action depends largely upon the interest manifested by those who possess that most noble of all perquisites of freedom and liberty—the ballot.

That governmental supervision of health was not begun years ago is not the fault of our representatives in Congress but of ourselves. It is the result of the lamentable ignorance upon the part of the general body politic in matters relating to public health. The citizen must be partly educated, he must be led to see the value and the necessity of a National Department of Health. The latter, once established, will then continue the education of the public until practical results make themselves evident. The farmer of intelligence realizes the great good that has come to his live stock through the activities of the Bureau of Animal Industry. He knows where to go for information that will help prevent the spread of cholera from his neighbor's hogs to his own. About the preservation of his own health he knows next to nothing. In these parlous days of the high price of living, human life alone seems to be cheap. That cold storage may double the cost of an egg causes the shedding of much printer's ink. But that ignorance should increase disease and should shorten life to such a degree as to cause an economic loss of millions of dollars per year calls forth little comment.

We are willing to accept as a premise, which requires neither argument nor proof, that intelligent physicians are unanimous in seeing the need for a National Health Bureau. But physicians form only a small proportion of the voting multitude. If the non-medical citizens can be made to realize the value of health and of life we shall soon have what we should have had long ago.

Undoubtedly matters such as organization and Cabinet representation will be used as arguments against the Department's establishment. These are, however, only secondary considerations. The physician is not so much concerned with the representation that his profession may or ought to receive at the hands of the Government as he is with the making of a beginning. Once started, the Department will satisfactorily work out its own problems and will give ample return to the people for the cost of its maintenance.

It may be argued—as a matter of fact, it has already been so argued by an almost-physician Senator—that the Public Health and Marine Hospital Service and the Medical Corps of the Army and of the Navy are already doing all that can be done. There is no wish to belittle the truly wonderful work performed by these branches of the Government. It does not detract from their work to ask for a central bureau, one of whose functions shall be the coordination of facts already garnered and the broad direction of future labors.

The Committee of One Hundred of the American Association for the Advancement of Science has given the following as reasons "Why the people of the United States should have a Department of Health":

"1. To stop the spread of typhoid fever through drinking sewage-polluted water of interstate streams.

"2. To enforce adequate quarantine regulations, so as to keep out of the country plague and other similar pestilences.

"3. To supervise interstate common carriers, in so far as without supervision they prove a menance to the health of the traveling public.

"4. To have a central organization of such dignity and importance, that departments of health of states and cities will seek its cooperation and will pay heed to its advice.

"5. To influence health authorities, state and municipal, to enact uniform legislation in relation to health matters.

"6. To act as a clearing-house of state and local health regulations and to codify such regulations.

"7. To draw up a model scheme of sanitary legislation for the assistance of state and municipal health officers.

"8. To gather accurate data on all questions of sanitation throughout the United States.

"9. To establish the chief causes of preventable disease and unnecessary ill-health.

"10. To study conditions and causes of disease recurring in different parts of the United States.

"11. To correlate and assist investigations carried on in many separate and unrelated biological and pathological federal, state and private laboratories.

"12. To consolidate and coordinate the many separate Government bureaus now engaged in independent health work.

"13. To effect economies in the administration of these bureaus.

"14. To publish and distribute throughout the country bulletins in relation to human health.

"15. To apply our *existing* knowledge of hygiene to our living conditions.

"16. To cut in two the present death-rate in the United States, as the authorities are agreed might be done."

Anyone who gives the matter thought can think of still other reasons. A properly organized Department will find only part of its labors in the investigation and prevention of infectious diseases. It will study the social and industrial conditions which exist throughout the country—hygiene in its broadest sense. The average duration of life will be lengthened by the prevention of accident and of premature senescence as well as of disease.

To recapitulate, a National Department of Health is necessary for the proper conservation of human health, energy, happiness and life. That it was not established long ago is due largely to the almost criminal ignorance of the masses in matters appertaining to their own well-being. At last, after many years, affairs have reached the stage when the question of the establishment of the Department can be forced to a vote and to a successful issue if the proper force is brought to bear upon the members of Congress. The movement has been endorsed by former President Roosevelt, by President Taft, by both great political parties in their platforms, by many national societies, among them the National Grange, the American Federation of Labor, the American Medical Association, the National Association for the Study and Prevention of Tuberculosis, and the Committee of One Hundred.

More is necessary than the general, one might say the diffuse, endorsement of these bodies. Widespread local influences must be brought to bear, and that at once, because the subject is now before the Senate. Local organizations—civic and social, such as Chambers of Commerce, Labor Unions, Civic Leagues, etc., and medical societies, both county and State—must show that they actually desire the centralization of governmental health activities. Above all, the individual physician should remember that he is also a citizen, and as such should demand from his

Senators and his Representatives the necessary action. Still more important, he should impress upon all with whom he comes in contact the necessity of their making similar demands. When the individual members of Congress realize that there has been an awakening, that the masses understand that there can be and should be great improvement in matters relating to the public health, the necessary legislation will soon folow. O. T. S.

The Decennial Revision of the United States Pharmacopoeia.

We desire to call the attention of our readers to the interesting paper of Professor Remington on this topic[1] and to its discussion before the Medico-Pharmaceutical Section of the Academy. The subject is of the highest importance to the profession; for the Pharmacopoeia of a country should reflect, indeed it should set the pace for, its therapeutic practise. It is self-evident that it can do this only if the medical profession takes an active interest in its revision, and we are glad to see the many evidences of such interest. One gratifying result has already been accomplished: the ideas of the different men who are especially active in this campaign are crystallizing along definite lines, and these lines tend to converge more and more. There seems now to be substantial agreement that admission to the Pharmacopoeia should be governed mainly by intrinsic merit; that the decision as to admissions should rest essentially with the medical profession; that there should be more frequent revisions; that the greatest practical publicity is desirable; that the revision itself should be intrusted to a relatively small committee with individual as well as collective responsibility.

The acceptance of these principles is a great step in advance. There still remains one fundamental matter in regard to which agreement has not yet been reached: namely, whether the Convention should leave as much as possible, or as little as possible, to the Revision Committee; whether questions of policy, of expediency, and of ways and means should be decided by the Convention, as far as possible; or whether all such questions should be left to the judgment of the Revision Committee, as far as possible. There is something to be said on both sides; but since the delegates will have only this one opportunity of making their opinions effective, it appears to be their duty to insist that the instructions of the Convention to the Revision Committee on all important matters shall be as definite as possible. T. S.

[1] Pp. 247 and 304.

Rural Sanitation in England.

Although it is not possible to make a fair comparison between sanitary activities in England and in Ohio, yet in our present appreciation of the need for improvement the results obtained in older countries may be of great value as an index. The efficient administration of public health affairs in the country districts in England is made much easier through the comparative density of the population, one village lying close to another, and the intervening roads, far better than ours for this same reason of density, being dotted with farms and cottages. In addition to this, and of at least equal importance, is the greater centralization of government comparatively unhindered by excessive doctrines of State and municipal rights. While the local sanitary authorities are granted a fairly wide margin of freedom, the county officials have controlling powers, and over them again are the central authorities, in a position similar to one of our Departments. These last are very strong in that they give practical interpretation of the various Acts of Parliament affecting sanitary matters, that appointments must receive their approval, and also in that part at least of the salaries are paid by them, and that no sanitary operation involving sufficient expenses to necessitate a loan can be financed without their approval of plan, method, and estimate.

Owing to the growth of interest in sanitary matters, and the fact that several agencies such as the Board of Education and the Poor Law Board have also some powers in these lines, the machinery is somewhat cumbrous, and at times there is confusion as to procedures, yet on the whole the arrangement is very satisfactory, and the fact that the central authority can send inspectors anywhere, and does so especially where there are any complaints of maladministration, is an excellent check on the local authorities.

For rough comparison we may take an English county as resembling one of our States, inasmuch as they have a general county government and separate boards or councils for the subdivisions. Each county is divided into rural and urban districts, the latter of which correspond to our cities and larger municipalities, and are more or less similar to these in their methods of dealing with public health matters. The rural districts, on the other hand, comprise areas which contain no town of importance and are often quite large, especially when thickly settled. They are built up by the coalition of a variable number of the original parishes, and in many cases are arranged about some urban district, and bear a like name.

Over each of these rural districts is a Health Officer, with a variable number of Sanitary Inspectors under him, according to the needs of the community. It must be at once noted that the qualifications for both of these posts are far higher than is the case with us, specialized duties and competitive examinations being prerequisites for appointment. In all the important posts the Health Officer is required to have the special degree of Doctor of Public Health. The sanitary inspectors are in many cases also surveyors and thus able to be of much greater value to their chiefs. Most of the appointments, while in no true sense political, are for one year only, but are usually continued indefinitely. These Rural Officers have in general the same duties in regard to general sanitation as the officers in the urban districts, but it is in regard to the special problems that concern a scattered population that this review is written. Though, according to the letter of the law, admittance may be refused, save under a magistrate's order, these officers have a practical right of entry and it is only in rare cases that legal action has to be taken. This admits of routine inspection of houses, outhouses, and other buildings, and also of special inspection of places complained of as unsanitary, these complaints being acted on whether signed or anonymous.

The special activities of the officers may be considered in general as coming under three heads: First, we may consider drainage and water supply. Drainage into streams or other bodies of water is prohibited until there is a satisfactory purification of the sewage, and closets hanging over streams, so common at home, are no longer permitted. A certain latitude is, however, allowed, and when drainage is entirely of the sink and floor-washing type, as is usual in the small communities, it is allowed to discharge into the streams and ditches, unless there is a complaint of a nuisance. It is, however, the desire of the sanitary authorities to establish sewage disposal systems everywhere, of varying types of simplicity, if the finances of the community will admit the expense. All forms of closet except the pail type and the water-closet are being gradually removed, cess-pools and the so-called "privy-middens" (brick-lined pits in the yard to receive ashes, household refuse, and fecal matter) are no longer authorized, and are being removed as fast as practicable. Villages of as few as 20 houses frequently have simple and inexpensive drainage systems, and small sewage disposal plants, usually with an outfall on cultivated land, and regular scavengers are employed in many small places. Whereever the amount of sewage effluent is large, chemical examinations are made from time to time and alterations in the plants sufficient to keep up the standard enforced. This is aided in many places by the formation of definite River Boards for the safeguarding of definite watersheds, an arrangement worthy of a separate report.

The water supplies are carefully watched and it is the aim of the sanitary authority to have a central water supply for each community, and to obviate the use of private wells as far as possible. While the supervision of the disposition of house drainage tends to protect the wells of a shallow type, it is in many places not possible to obtain safe water from such sources, and very difficult to keep proper watch over so large a number of individual supplies. Through legal powers conferred on them the Sanitary Authorities can refuse to allow the occupation of new houses without their certificate that the water supply is safe and adequate, but it is obvious that the application of this requires much tact on the part of the Health Officer. Where there is no available method of obtaining satisfactory water without undue expense on the part of the owner, it is the usual custom to allow the house to be occupied without certificate, and to enforce the use of a central supply as soon as that is provided. Where the supply is from wells, it is the duty of the officers to be sure that they are in good condition and that any adjacent sources of possible pollution are removed, and the urban and rural councils are authorized to make payment of analysis fees, in case of necessity.

The central supply for a rural district is usually drawn either from existing springs of suitable character, or from wells driven for a variable distance. In the former case two general methods are in use. Where the community is small and more or less compact, the water from the springs is collected in tanks and allowed to flow by gravity to one or more convenient points in the villages, where it reaches standpipes with constant or controlled flow, and to which the residents come with containers. This is economical, as there are no reservoirs necessary, or at most, small ones, and practically no running expenses. Where the number of residents is greater, or the slope of the land makes this method inconvenient, water rams are often found satisfactory, and are economical in maintenance, though very wasteful of the water. There are, however, many places in which the supply of water is not conveniently arranged for the former method, and of insufficient quantity if collected by a ram, and a variety of ingenious methods of utilization have resulted from the local needs. Boggy districts, where there are apparently springs, are examined, the direction of the flow of the water determined by test wells in different directions, and where they give promise of adequate supply a sufficient area of land to insure protection is purchased, and reservoirs built. These are sometimes merely caissons with open bottoms over the main flow of the spring, sometimes closed and placed at such a level as to catch the stream. From these the water is supplied by gravity as far as possible, and when necessary pumped to high-level reservoirs or water towers, by engines of various types, and distributed to the district. They are usually run by one man, and inasmuch as the houses in the smaller districts are usually not piped, the residents taking their water from standpipes along the roads at convenient intervals, a nine or ten hour day is usually enough to keep up the supply.

Where no springs are available, and no safe surface water can be obtained, deep wells are driven, and the water pumped into reservoirs or towers and distributed in the same way. The striking thing is the number of small communities of 150 or more inhabitants which have these central supplies. Where there is enough water the residents are encouraged by moderate rates to have the water laid on into the house, and where there is in addition satisfactory drainage to have water-closets connected. These supplies are examined chemically and bacteriologically from time to time as a routine, and in addition whenever there is a complaint. The mains extend long distances along the roads, often as much as 12 or more miles from the central station, with lateral branches. Satisfactory arrangements are in vogue where the supply of one community is greater that its needs, and the reverse is true in regard to the neighboring communities. A conjoint district for water purposes may be formed, with proportionate division of the expense on the basis of population, or payment may be made by meter. If the adjacent village is in another rural district, no arrangement can be made without the sanction of the Central Authority. Some counties are accordingly endeavoring to get control over all local supplies so that the surplus water in any district may be made available for adjacent ones without complications.

The result of these activities has been the notable reduction of water-borne disease, on the one hand by the proper disposal of fecal material, and on the other by proper checks on the water supply. It must be said that the climate is a great aid in these matters, as the temperature rarely falls much below freezing, so that the mains do not need to be buried over two feet, and the standpipes need only slight protection.

The second special activity of the Sanitary Authority concerns the contagious diseases. In most of the rural districts, at least in the counties about London, there are contagious disease hospitals where all cases of scarlet fever, diphtheria, typhoid, and sometimes also measles, etc., may be isolated and treated, and which keep disinfecting machines large enough for mattresses, both for the use of the hospital and for the clothing and bedding of the infected houses. These hospitals are frequently joint affairs belonging to the urban district and the adjacent rural district, or the two rural districts. These vary according to the needs of the district and its finances, from small corrugated iron buildings or even tents to well-constructed permanent buildings with their own water supply and sewage disposal plants. The Central Authorities in certain counties encourage the latter type by a grant of $25.00 per bed annually, where their specifications are met. English cottages are usually very small, and there is no proper accommodation for the sick, so that most of the contagious cases are removed at once. Certain diseases such as scarlet fever, diphtheria, typhoid, smallpox, and others, are notifiable, and to compensate the private practitioner for the loss of the case, he is paid a small fee for the notification. In the country districts an estimate of one bed per 2,000 of the population governs the size of the hospital, and in large villages and in urban districts, one bed per 1,000. In direct connection with this are the duties of the School Medical Officers under the Board of Education. As noted in a previous communication it is among their duties to see that children suffering from contagious diseases are excluded from school and not allowed to return until they are considered safe. Where the inspectors are efficient the epidemics are usually checked early.

The third special activity concerns more particularly the general condition of the dwellings of the poorer classes. Through the recent Housing and Town Planning Law, introduced by

John Burns, additional power has been given the Sanitary Authorities to exercise supervision over such buildings. This applies to town and country alike and in the hands of progressive Health Officers has already led to increased activity. The main benefit is that it adds power towards the improvement of houses already built and the destruction of those no longer fit for human habitation. Many of the English cottages were built several hundred years ago, and are quite devoid of sanitary appliances or conveniences, with walls at the point of falling, leaky roofs, and other conditions incompatible with the proper health of the residents. Some, in the course of development of the place or the grading of the roads, are far below ground-level and inasmuch as the floors are laid directly on the earth, cellars being rare in this type, they are shockingly damp. It now becomes the duty of the Sanitary Authorities to see that these houses are either improved in a satisfactory maner, or that they are closed for inhabitation and ultimately destroyed.

While these special activities are being exercised, the dictum of a great law giver, "and not to leave the other undone," must be kept in mind, and the supervision of work places, of dairies, of bakeries, and all the general routine of a sanitary department must be kept to standard. Personal experience of the conditions to be met and the methods by which they are met, impresses upon one the lesson that "who goes slowly goes safely." In dealing with the rural mind it is necessary to show that the expense will be more than balanced by the benefit, to avoid antagonizing the units of the community, and to use infinite tact and patience in dealing with the rural councils. My own experience has so far been limited to the County of Essex, a county near London, fairly closely populated, and with a very efficient County Medical Officer, but the main regulations are the same elsewhere. It is possible under the laws and regulations to be more or less active, according to the personal disposition of the Health Officer. The active and efficient man knows from personal supervision all the important details in the district, and his efficient inspector knows all the minor details, but in many cases much less is done. The tendency on the part of the Central Authority is to weed out the inefficient as far as is possible and the fact that there are at present a large number of properly qualified men on the lookout for positions of all sorts is a marked stimulus to the activity of those at present in office.

R. G. P.

Research Fostered by Commercial Interests.

It is becoming more and more evident with the stress of competition at the present day that in order to retain its position a commercial institution must continue to improve the service which it offers to its patrons. In the same way, a manufacturing concern, to insure its continuance, must always improve the quality of the product which it offers the consumer, otherwise it cannot hold its own, much less extend the limits of its business. Thoughtful persons cannot overlook the fact that the most successful houses are, on the whole, the ones that recognize this fact, and every progressive manufacturing concern puts a considerable portion of its earnings back into this department of its work, viz., experimentation with the view of improvement of its product.

It is quite a jump, however, but if broadly viewed not so far after all, from this to the establishment of an institution for pure research. In this case, viewed from the commercial standpoint, tangible results are not so evident, the prospect of even indirect returns is not large, and of direct returns still less.

It will be of interest to medical men, for more reasons than one, to know that here in Cleveland there has been established a laboratory for research by the National Electric Lamp Association, known as the Physical Laboratory. The work contemplated, and at present in progress, is not limited to physics however. The idea that has prevailed in the organization of the work has been the coordination of the two phases of the question of illumination, viz., the physical and the physiological sides.

The work seems to fall into three divisions, not however distinctly separated from each other.

(1) The production of luminous energy, dealing with the laws of radiation and of radiating bodies from the purely physical side.

(2) The physiological effect of radiation, including problems in physiological optics as related to the question of radiation; and not less the more general problems of physiology as to the reaction of living cells and organisms to light and the influence of light on various physiological processes.

(3) Between these two the intermediate field, including problems met with in the application of light, such as the reflecting and absorbing properties of matter, the measurement of light, and the question of color and color-sensation as related to the use of various light-sources.

The present staff of the Laboratory is as follows:

Dr Edw. P. Hyde, A. B., Johns Hopkins University, 1900; Ph. D., Johns Hopkins University, 1906; formerly Associate Physicist at the Bureau of Standards, Washington, D. C.; Director of the Laboratory.

Mr. F. E. Cady, B. S., Mass. Inst. of Technology, 1901; formerly Assistant Physicist, Bureau of Standards, Washington; Scientific Assistant to the Director.

Dr Herbert E. Ives, B. S., Univ. of Pennsylvania, 1905; Ph. D., Johns Hopkins University, 1908; formerly Assistant Physicist at Bureau of Standards, Washington. Dr Ives has charge of the intermediate division outlined under (3) above.

Dr Percy W. Cobb, B. S., Case School of Applied Science, 1894; M. D., Western Reserve University, 1902; formerly Demonstrator and Assistant in Physiology, and at present Demonstrator in Physiology of the Special Senses at Western Reserve University,—in charge of the Physiological Division of the work.

In addition, this laboratory employs Mr. Wm. Würth, mechanician in charge of the instrument shop, a stenographer, and a general utility boy.

The building occupied is at present a one-story building, with basement, on Hough avenue at the corner of East 45th street. This building is not large and is already overcrowded with its occupants and equipment, but more space is already in sight in a new building.

The instrument equipment is already fairly complete and is being added to continually as the work demands, both by purchase and by the product of the instrument shop already alluded to, which is part of the Laboratory.

The general library of the Association occupies space in the building. Aside from the scientific journals, there are many trade and technical periodicals here, and textbooks and back files of scientific literature are already filling the space devoted to it.

One phase of this work of interest to both the science of light-production and ophthalmology must be mentioned. In looking over the literature of physiological optics, especially in its infancy, one finds, among others, the names of many astronomers and physicists; naturally so as the problems of vision arose largely in connection with those of optical instruments, spectrometry, etc. Later, practically all the exact work in physiological optics, for instance, work in color and color mixture, has been done by men who are experts in physical optics. Two notable examples of these men might be mentioned,—Helmholtz and Koenig. It may be a little ambitious to mention these names in this connection but it is at least expected in this laboratory, by the cooperation of men trained in physics and in physiology, to bring about results which either talent alone could not attain.

Of especial interest to ophthalmologists is the question as to the effect on the eyes of work by artificial light. The feeling is general that artificial light is unfavorable to the eyes and clinical experience bears this out, but exact evidence on the point seems to be wanting, although speculation is rampant. For instance, as to the frightful effects of the ultra violet rays which created a great discussion two years or so ago. These "frightful effects" have been clearly demonstrated only at extremely high intensities, such as leave conditions of practical illumination entirely out of the question.

It is interesting to note that last January the Illuminating Engineering Society of London held a symposium on "Glare" as considered from the physiological standpoint. A list of questions was sent to men in all parts of the world who were thought to be interested, and the reports of the transactions of that meeting show, among other things, that there is much to be learned in the subject of bad illumination.

Finally, as subjects for investigation at this laboratory are to be mentioned the Roentgen rays and the emanations of radioactive substances. At present, work in these subjects is not contemplated, but they will always be possibilities in such a laboratory. J. J. R. M.

Dental Clinics in the Schools.

The opening of the National Campaign on Oral Hygiene, under the auspices of the National Dental Association, the Ohio State Dental Society and the Cleveland Dental Society, took place in this city on March 18, 1910. The meetings, held in Grays' Armory, were addressed by representatives of the President of the United States, the Governor of Ohio, The Cleveland Board of Education, and the above societies. The purposes of this campaign are "to bring the importance of this vital subject fully and frankly to parents, educators, social workers, and philanthropists: to invite the public to an open discussion on oral hygiene: to determine how best to further the popular movement for better care of the mouth and teeth."

One of the most notable features of the occasion, however, was the inauguration of six dental clinics, in four of the Cleveland public schools, viz., Marion, Stanard, Sackett and Lawn schools, and at St. Alexis hospital and at the City Hall. The outfits of these clinics have been supplied by various manufacturers of dental supplies; after being used here this year the outfits will probably be sent to some other city where similar school clinics will be started.

This move, which takes place almost simultaneously with the appointment, by the school-board, of medical inspectors who shall have supervision over the health of the pupils, is but another evidence of the growing belief that prophylaxis is to be the dominant factor in the hygiene of the future.

The management of these dental clinics is to be in the hands of the Cleveland Dental Society; 90% of the members having volunteered to give one week's time, or its cash equivalent, during the year 1910. Those members, who will have charge of the work, will serve voluntarily and without salary but if, at the end of the year, the results seem to warrant such a step, it is hoped the clinicians may be placed upon a similar footing to the newly-appointed school inspectors and be paid salaries by the school-board.

The need for either "instruction in the care and use of the mouth, or professional services to place the oral cavity in healthy condition" seems apparent from the results of preliminary investigations which tend to show that 97% of the school children are in need of such care and instruction.

The plan, at present outlined, contemplates the examination of the teeth of every pupil when he first enters school; the recording of the results of this examination upon a card which shall accompany the pupil from grade to grade; the reexamination of each pupil at regular intervals so that the chances may be increased that any dental disease may be discovered in its incipiency; and the notification of the parents whenever dental lesions are discovered so that appropriate treatment may be instituted at once.

It is not, by any means, proposed to furnish free dental treatment to every pupil but merely to provide supervision over the teeth of them all. Parents, who so desire, may have the blank forms filled out and the reexaminations made, by their own private dentists. Whenever lesions are discovered by the inspectors the parents will be notified of the dental or oral necessities of the child and it is only in case of their being financially unable to do so, or their continued failure to comply with the instructions, or for other good reasons, that the actual treatment will be carried out in the clinics.

The great importance of dental disease upon the general health of the individual, the tendency of such lesions to interfere with the bodily and mental development of the child and, last but not least, the fact that such disease may be painless and discovered only from a careful examination by a competent dentist—all tend to show the great value of such a systematic supervision of the teeth of school children. The objections that have been raised to such a plan, especially that in reference to the pauperization of the public, seem to have been satisfactorily guarded against in the plan outlined above. W. H. W.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Glycosuria: In the *New York Medical Journal* for Feb. 26, Victor C. Vaughn considers the management of glycosuria in elderly persons. The early detection of glycosuria of this kind is now largely a matter of accident. The patient goes to the physician for some ailment or injury, the urine is examined, and the condition detected. The first thing to do is to ascertain what carbohyrate foods the individual can still assimilate. It is his practise to cut off all carbohydrates for a week, and if this is followed by complete disappearance of sugar from the urine, he tries oatmeal. He insists that oatmeal be used, and not some preparation with a fanciful name sold as a breakfast-food. Whether the oatmeal is borne or not he tries potatoes, peas, beans, etc., one by one, not two at a time, for if the latter method is followed the physician learns nothing positively. Frequent examination of the urine is necessary, and he finds that in many of the so-called "mild" glycosurias, the patient can assimilate most starchy foods except sugar and wheat-starch. This is his first practical point; the glycosuria of elderly life is due, in many instances at least, to excessive carbohydrate feeding: this excess is usually confined to some special carbohydrates, sugar and wheat-starch. In the early glycosuria of this class the patient is often easily able to care for other carbohydrate foods; the harmful carbohydrates should be detected and eliminated from the food; those that can be assimilated should be determined and permitted; there is a specificity in the metabolism of carbohydrates, as there is in that of proteids; the presence of a small amount (0.5 to 2%) of sugar in the urine should not be regarded as a matter of trivial importance. The second point he makes is that in many persons the capacity of assimilating carbohydrates is largely determined by the time of day when food is taken. Glycosurics who can not metabolize carbohydrates when taken for breakfast may dispose of 100 grams of bread at a six o'clock dinner. Why this is true he does not know, nor to what extent, but he has observed it in many patients. The third point is the value of the open-air treatment of this form of glycosuria: he believes, that while noted by some authorities on diabetes, it has not been sufficiently emphasized. He thinks that porch sleeping is quite as beneficial to the glycosuric as to the tuberculous.

Adrenal Therapy: Charles E. de M. Sajous, in the February number of the *Monthly Cyclopaedia and Medical Bulletin,* summarizes the value of adrenal therapy. While the list could be greatly extended he limits himself to those disorders in which its use has been sufficiently advantageous to warrant placing stress upon its value. (1) Addison's disease: here adrenal preparations compensate for the deficiency of adrenal secretion, and hence for deficient general oxidation, metabolism, and nutrition. The dosage should be adjusted to the needs of each case. Beginning with three grains of the desiccated extract, three times daily after meals, the dose should be gradually increased until the temperature and blood-pressure become normal, when the last dose should be maintained. (2) Surgical heart-failure, collapse from hemorrhage, shock, asphyxia and submersion: in these the adrenal active principle (adrenalin, suprarenalin, etc.) should be very slowly administered intravenously, five minims of the 1-1000 solution to the pint of warm (105° F.) saline solution. In urgent cases 10 drops in one dram of saline solution can be used instead and repeated at intervals until the heart responds. (3) The toxemias, including bacterial infections, surgical septicemias, etc., when collapse threatens, especially with a persistently low blood-pressure, hypothermia and cyanosis. (4) Capillary hemorrhage from the pharyngeal, esophageal, gastric or intestinal mucous membrane. He adds to these certain disorders in which adrenal preparations will probably prove of great value when sufficient evidence will warrant a full conclusion. They are: (1) Sthenic cardiac disorders with dilation of the right ventricle, dyspnea, and possibly cyanosis and edema, tablets of from one-half to two grains of the desiccated glands can be taken after meals. (2) In asthma to arrest the paroxysms: here from five to ten minims of the 1-1000 solution of suprarenalin or adrenalin in one dram of saline solution should be injected drop by drop into a superficial vein or hypodermically. (3) To prevent the recurrence after aspiration of serous effusions in the pleura, peritoneum, tunica vaginalis, etc. From eight minims to two drams (according to the size of the cavity) of suprarenalin or adrenalin in four times the quantity of saline solution should be injected into the cavity. In neuralgias or neuritis, applied to the cutaneous surface over the diseased area to produce ischemia of the hyperemic nerves and thus arrest the pain, one to two minims of a 1 to 1000 solution adrenalin ointment should be applied by inunction.

Rheumatic Fever: Frank Sherman Meara, in the *American Journal of the Medical Sciences* for March, considers the treatment of rheumatic fever. As to the specific treatment he believes that the salicylic derivatives are not really specific although of undoubted value: they are antipyretic and antiseptic as well as anodyne. Salicylic acid may be administered as such, or in the form of a salt, or ester. The effect is the same in kind in all forms, but certain by-effects determine the use of one or the other. It should be administered in full doses, as failure may often be attributed to insufficient dosage. His usual adult dose is 20 grains of one or the other form of the drug every two hours for the first 24 or even 48 hours. When the pain subsides the dose may be cut down to 15, 10 or even 5 grains at a dose, depending on the progress of events. The dose should be well-maintained at amounts of 10 grains every two hours, until the active phases, as evidenced by fever, pain, and joint-swelling have passed. As to the usual disagreeable symptoms following their use, he believes that they may be attributed in some cases to the disease rather than the drug, in others to impurities in the product used, and finally to idosyncrasies. Buzzing, roaring in the ears, and deafness, as well as gastric disturbances, however, are to be attributed to the drug. He advises, as a rule, the sodium salicylate, given alone and in simple solution. When this is not well-borne, he prefers aspirin in 15 grain doses at the outset, given in capsules. He also prefers the oil of gaultheria in capsules, since when given in milk, as sometimes advised, the patient soon tires of it. It is usually well-borne, but the taste in the eructations which it is apt to induce is its chief drawback. These three forms of the acid will usually suffice but salicin may also be used, if preferred, and in the same dose. Salol or phenyl salicylate has the disadvantage of yielding carbolic acid in its decomposition. When patients cannot take the salicylic acid in any form the synthetic derivatives may be used to control pain. Acetanilid, antipyrin and acetphenetidin may here be used. The acetanilid is the most potent, but also the most irritating and toxic, and none of these drugs should be given over a long time, often small doses frequently repeated are as efficient as the larger doses.

Dietetics: *American Medicine* in the February number says that more dietetic knowledge is imperative. For instance, there is no doubt that in cutting down the diet to avoid indigestion we not infrequently cause loss of immunity from undernutrition, and the hope is often expressed that in time we will learn how to keep a fever patient as well nourished as before he became sick, so that when the disease is over the period of convalescence to regain weight will be practically eliminated. That is, so much is to be learned before we reach a perfection of management, that only a specialist can work out the details and teach us what to do. At present when we find capable men advising only milk in a certain condition on account of the dangers of meat, and others declaring milk to be so highly dangerous that only meat should be given, it is quite evident that something must be done and soon. There is either an unknown factor in each case or illogical reasoning, to be cleared up by special investigations. Not only the sick may be mismanaged but the healthy may be inviting serious disease by following any one of the fads now fashionable, that of nitrogen-starvation for instance. If a physiologist specializes on foods he may be dangerous unless his theories are confirmed by the therapeutist and pathologist, so the dietist must harmonize them all.

Serum-Sickness: E. C. L. Miller and W. W. Root in *The Therapeutic Gazette* for February, state concerning serum-sickness and sudden death following the use of antitoxin, that after the administration of diphtheria antitoxin, the physician may notice a local or diffuse eruption likely to be accompanied by itching, and possibly associated with fever, pain in the joints and other symptoms. Such an experience is not an uncommon one, for it is here and there met with in the practise of all physicians who have occasion to use large quantities of serum: furthermore it is independent of the make of serum; has nothing to do with its antitoxic qualities; and is as likely to occur after the use of antitetanic, antistreptococcic, antigonococcic, or of normal horse serum. It is a remarkable fact that in the list of cases in which antidiptheric serum has been injected, more are reported from immunizing doses than from curative doses, despite the fact that very much more serum, and many more injections are of course given for treatment than in prophylaxis. "Serum-sickness" and "serum-intoxication" are terms given to a train of undesirable symptoms following the injection of serum in man. These occur in about 20% of cases and consist of urticaria, itching, fever, enlarged lymph-nodes, pain in the joints, edema and occasionally albuminuria. These are usually noticed from eight to twelve days after the injection of serum and follow the first injection, although it is true that in a person who has received a previous injection they are liable to come on earlier, and, as a rule, the more recent the previous injection the earlier the serum-sickness is apt to show. The peculiarity of serum-sickness is that it often follows a first injection while anaphylaxis in animals is manifested only after a second injection: they are both probably due to the reaction of the system to the injection of a foreign proteid substance. In institutions where children are injected with serum at regular intervals, the percentage of children showing symptoms of serum-sickness increases with the number of times they have been injected. Serum-sickness is not to be regarded as dangerous, the symptoms pass away in a few days, as a usual thing, and leave the patient none the worse for the attack. The treatment is symptomatic. As to death at the time of injection they summarize as follows: 1 It may have been caused by the serum, but it does not accord with any known action of serum. (2) It may have been caused by status lymphaticus, or some allied condition. (3) It may have been from causes unknown.

Pneumococcus Vaccine: In the *Medical Record* for February 12, Henry A. Craig reports six cases of pneumonia occurring in the aged, which were treated with pneumococcus vaccine, in which recovery followed. The age varied from 66 to 83 years and many had a marked alcoholic history, several cases developing at the end of an alcoholic debauch: all were in poor general condition, all but one having chronic nephritis and all showing marked arteriosclerosis. There was a marked contrast between the results of the vaccine treatment, and the previous mortality of similar cases in the hospital. The mortality in these cases in the hospital for the four years preceding the vaccine treatment was 66⅔%. The present plan of treatment is, as soon as the diagnosis is made, to give the patient a hypodermic injection of 20,000,000 to 35,000,000 killed pneumococci of a vaccine left over from the previous case of pneumonia, and then making an autogenous vaccine from pneumococci isolated from his own sputum to carry on the treatment. The inoculations of the killed bacteria into the patient were repeated in 24 to 48 hours for one, two or three doses as found necessary, 20,000,000 being the minimum and 50,000,000 the maximum dose. In addition to the vaccine the patients were treated symptomatically, and given stimulants, etc., as indicated.

Apocynum Cannabinum: In the *American Journal of Clinical Medicine* for March *(Muenchener Medicinische Wochenschrift),* Felix Kramer asserts that apocynum cannabinum, while long used in America and in Asia as well as in Russia during the last decade, has not obtained in Germany the attention it deserves. The active principle, a glucosid called apocynin, is like that of digitalis a cardiac poison and is used as a cardiac tonic and a diuretic. According to Aleksejew, the effect of the remedy appears in proper cases in two or three days. If no remedial action appeared in five days, he made no further use of the remedy. He prescribed small doses (from three to five drops), three to four times a day. After larger doses he met, at times, gastric disturbance and pains in the cardiac region. Cumulative effects he did not encounter. The dosage, according to Golubin, is five drops three or four times a day. Pawinsky found as compared with digitalis that apocynum acts more readily and energetically on the innervation of the heart than digitalis, but the effect of the latter is a more persistent one and he therefore uses the remedy at shorter intervals, especially in cases of arhythmia. His dosage is somewhat higher, 8 to 10 drops of fluidextract two or three times a day, but one should always begin with small doses. The indications for the remedy are valvular lesions and affections of the heart-muscle at the time of disturbance of compensation. Robin gives 30 drops of the remedy three times daily. A case reported in which the action of the remedy was surprising was as follows: the patient, a man of 51, had myocarditis, arteriosclerosis and hypertrophy of the liver. The edema and ascites were not affected or removed by digalen, digitalis, digitalis with diuretin, alternated with caffein, strophanthus, theocin, theophyllin, fluidextract equisetum, infusion of juniper, and treatment with calomel. At times the fluid would be reduced to a mimimum, but before using paracentesis abdominis, the fluidextract of apocynum was given in 12 drop doses three times a day, increased to 15 with surprising results. Twenty hours after its administration the swelling of the legs, especially the right, was reduced, showing natural relation of the parts. The ascites too was reduced, but the hepatic swelling remained stationary. Although the swelling of the legs reappeared after four days, it was remarkable that in a case where all other diuretics had failed, apocynum should have shown such an almost magical effect. It certainly deserves to be tried and used in cases of compensatory disturbances before resorting to paracentesis abdominis.

Catarrhal Pneumonia: The *Critic and Guide,* in the February number makes the assertion that for all practical purposes, we need not distinguish between lobular pneumonia and capillary bronchitis, as in this disease in children most cases occur during the first year of life when the prognosis is worst, but after the fifth year the mortality is low. As lobar pneumonia is a primary disease, so catarrhal pneumonia is a secondary one, measles, whooping-cough, diphtheria, influenza, summer diarrhea and rickets commonly preceding it. Treatment must be general and symptomatic as there is no direct curative treatment. In the dry, irritative, early stage 15 minute steam inhalations are of service and hot drinks and hot fomentations to the chest are also indicated. Citrate of potash and carbonate of ammonium are the favorite drugs in this disease. When the bronchial secretions become free, emetics may occasionally prove useful, provided the child is not weak, but they must never be used late in the disease. Tincture of belladonna or solution of atropin will check excessive secretions. Emptying of the tubes is favored by placing the head and shoulders on a lower plane than the hips and lower limbs. Paregoric in five to ten drop doses may be cautiously used if a nervous element shows in the cough. Two minim doses of tincture of digitalis should be given three times a day, for the toxemia will surely affect the heart soon or late.

Piper Methysticum: Paul Bartholow, in the *New York Medical Journal* for February 12, considers the therapeutic value of piper methysticum or kava in gonorrhea. The drug belongs to the *Piperaceae,* and is related to the other peppers, as cubebin and piperin, which it resembles chemically and physiologically. Its essential constituents, an alpha resin and a beta resin, appear practically identical and they yield a resin or oil which Lewin has called "kavaol" but which Baldi terms "cavaine," which name Bartholow adopts. He believes the physiological effect of cavaine is confined to an influence over the sense of pain and also, though perhaps not so great an influence, over the development of microorganisms. Lewin found that a drop of cavaine placed in the eye of a sparrow caused so complete a loss of sensation, that an incision could be made without pain. Bartholow found it to be rather soothing and sedative to the conjunctiva and mucous membranes after a short stage of stinging, but nothing like deep anesthesia or narcosis followed. Internally its effects on the kidney and urethra are most suggestive of the intrinsic value of cavaine, for its use has been restricted almost entirely to the treatment of acute gonorrhea and cystitis, but what it has lost by this restriction has been made up by the fervor with which all writers have praised it. It is a gentle diuretic with no sign of irritation of the kidneys and the effects upon the urethra are similar to those observed upon the application of pure cavaine to the cornea; that is to say it acts directly on the ends of the nerves causing a soothing or partially anesthetic effect rather than a paralyzing one, as some have held. Prof. Schmiedeberg has well-distinguished the good effects of the cavaine in the urine and its effects in relieving pain—on the former depends the healing quality of the urine, the absence of decomposition, so affording nothing that can favor the growth of gonococci; on the latter the means of facilitating the use of injections. Cavaine retards the decomposition of urine and the formation of ammonia. As to its effects on the gonococcus, Neisser observes that it ranks very high among internal remedies; so high that he is inclined to give it first place, even stating that it is not impossible that it alone may cure gonorrhea. The dose of cavaine is 0.02 gm. (1/3 gr.), four or five times a day. Two doses may be taken with profit at the noonday and evening meals. According to Baldi and Schmiedeberg it passes unchanged in the urine. Bartholow found its greatest effects were sedative and antiseptic, and it did not derange digestion.

Vaccine Virus: Heinrich Stern in *Therapeutic Medicine* for February says he is convinced that the inoculation of vaccine virus into an individual exhibiting gouty, rheumatic, neuralgic, neuritic, or angiosclerotic manifestations, will frequently disperse the accompanying pain, and in many instances will exert a beneficial influence upon the affection itself. Inoculation of cow-pox lymph will often allay pain when all other therapeutic measures have significantly failed. It may confer protection against pain exacerbations for very long periods; some of the patients inoculated eight or nine years ago have not missed a single day from business since. Paroxysms of pain may, in some instances, recur within a few months or days after successful vaccination, or the pains may not become entirely subdued, but may continue or return in a more or less modified, that is milder degree. It is a matter of routine with him to recommend vaccinal inoculations in all those instances of persistent muscular and articular pains, irrespective of the presence or absence of local manifestations, which have not yielded to the continued application of the more commonly employed therapeutic measures. He has never made use of it to ameliorate the pains of an acute condition like rheumatic fever, but has not hesitated to use it when the process underlying the pains appeared to be subacute or chronic in character. He sees, however, no objection to using it in the presence of fever, nor in the presence of an intercurrent disease like bronchitis, gastroduodenitis, etc. A successful vaccination does not necessarily depend on the appearance of a local lesion, that is, the immunizing substance may be produced in the organism in the absence of a vaccinal eruption; nevertheless he inoculates in close proximity to the painful area; and it is his experience that the more pronounced the ensuing cutaneous eruption at the point or points of inoculation, the more manifest will be the analgesic effect of the virus. It is his endeavor to obtain a somewhat diffuse eruption, and frequently the virus is inserted at more than one point in or near the affected region. Although the ordinary dose of vaccine suffices in many instances, he often employs three and even five times that amount in stubborn cases. It is imperative that but fresh and good virus be utilized in every instance. He does not dwell upon theoretical considerations and makes no extravagant claims for it as a therapeutic measure, but trusts that a number of clinicians will give it a thorough trial and report results obtained.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph. D., Ph. G.

Colors and Flavors in Pharmacy: In a paper on this subject W. Gartside (*Pharmaceutical Journal,* through *American Druggist, 56,* 105) gives recipes for several varieties of almond and vanilla combinations; he recommends a stock corrigent syrup consisting of cinnamon, ginger, cloves, nutmeg and glycyrrhiza; he suggests as an ideal vehicle for quinin a chocolate syrup, the recipe of which he furnishes; and offers as an excellent basis for children's cough-mixtures a compound syrup of blackberries, made from fresh blackberry juice and aromatics.

Calomel for Intramuscular Injections: Sublimed calomel, 40 gms., previously washed with boiling water, alcohol and ether is mixed with 86.65 grams of a mixture of three parts of liquid petrolatum with seven parts anhydrous wool-fat. The mixture will measure 100 c.c. and may be sterilized by heating to 120° to 130° C. After sterilization, the warm mixture must be shaken until its temperature is down to 30° C. (Boileau, *Bull. Soc. de Pharmacie de Bordeaux,* through *American Druggist, 56,* 108).

Gleditochia Japonica: The seeds of this plant, which is used in Japan for lepra and syphilis, when analyzed by Nakao (*Jour. Pharm. Soc. Japan,* through *Druggists Circular, 54,* 105) yielded a saponin melting at 135° and hydrolysing to pentose and a sapogenin melting at 270° to 275° C.

Canadian Hemp: From the root of this plant, *Apocynum cannabinum,* H. Finnemore (*Proc. Chem. Soc.,* through *Chemical Abstracts, 4,* 440) has isolated a principle which he calls cynotoxin, $C_{20}H_{28}O_6$, melting with a decomposition at 165° C. and which is apparently a dilacetone of Kiliani's digitic acid, $C_{20}H_{32}O_8$. It is an extremely potent substance of the digitalis class and constitutes the sole activity of apocynum; the other well-known principle, apocynin, being practically inert.

Pumpkin Seed: This drug, which is popularly considered as a teniafuge, has been submitted to exhaustive examination by Power and Salway (*Journal American Chemical Soc., 32,* 346) with the following results:

The fatty oil, obtained by expression, consisted of 45% of the glycerid of linoleic acid, 25% of the glycerid of oleic acid, and 30% of the glycerids of palmitic and stearic acids. It contains no myristic acid but has a small amount of physosterol $C_{27}H_{46}O$, melting at 167° to 163° C.

The press-cake contained 8.7% of the fixed oil described above, soluble protein compounds, sugar, a trace of salicylic acid, and ½ of 1% of resin, which consisted of the above described physosterol and hydroxycerotic acid, $C_{25}H_{51}O\ COOH$, melting at 99° C.

The shells contained nothing other than the constituents of the kernel, except a trace of copper. Physiological testing of the oil and the resin failed to show any results as anthelmintics and teniafuges.

Watermelon Seed: Power and Salway (*Journal American Chemical Society, 32,* 360) also examined these seeds which are popularly supposed to have a diuretic action. They found the oil had a composition similar to that from pumpkin seed; the press-cake likewise resembled that from pumpkin seed except that it contained a new alcohol, cucurbitol $C_{24}H_{40}O_4$ melting at 260° C.; while the shells yielded the same products as the press-cake and a trace of copper. Physiological testing showed the drug and its resin absolutely inert.

Physiologic Standardization: In a general discussion of the subject H. C. Wood, Jr. (*American Journal of Pharmacy, 82,* 101) emphasizes the difficulty of physiological assays, even in the hands of expert pharmacologists, and deprecates the performance of such work by "half-baked" experimenters hired by commercial houses at meagre salaries. He believes that the future of the commercial pharmacologists is most bright, as manufacturing firms will eventually see the need of paying salaries sufficient to attract the higher grade men. As physiologic testing is even more important pharmaceutically than in pure medicine, he believes schools of pharmacy will eventually take up this important part of the training of the pharmacists of the future.

Simmondsia Californica: This shrub belonging to the *Euphorbiaceae* and growing in Southern California and Arizona, has seeds which yield a purging oil and, like castor oil, is used as a hair-oil. Clarissa M. Roehr (*Pacific Pharmacist, 3,* 335) has given the seeds a careful examination and finds they yield 6.06% fixed oil, 42.87% fats and 12.97% proteids. The oil is thick viscid reddish-brown and is not vesicating like croton oil. The proteid is presumably the purgative principle, indications pointing to the presence of some toxin similar to those contained in castor oil.

Colocynth Constituents: Power and Moore *(Chemist and Druggist,* through *American Journal of Pharmacy, 82,* 129) report a comprehensive examination of Turkish colocynth. They find that so-called colocythin and colocynthetin are indefinite mixtures and that the activity of the drug is due to at least two principles; one feebly basic and the other non-basic.

Saccharin Solutions for Mercurial Injections: Professor Gaucher has recommended the administration of mercurial salts (benzoate and iodid) by injection (hypodermically?—Reviewer). Such injections have proved so painful that the addition of cocain to the solutions has been advocated, though in many cases the addition is inadvisable. Des Moulieres and Lafay *(L'Union Pharmaceutique,* through *Southern Pharmaceutical Journal, 2,* 311) finds that by using isotonic sugar solutions as a vehicle, the injections are easily borne. They suggest the following formulae: (a) Mercury benzoate, 1 gram; sodium chloride, 1 gram; saccharose, 10 grams; sterilized distilled water to make 100 c. c. (b) Mercuric iodid, 1 gram; sodium iodid, 1 gram; saccharose, 10 grams; sterilized distilled water to make 100 c. c. The chemicals should be of the highest purity, the mercurial salts preferably freshly prepared, and the finished solution sterilized by filtration through a porous cylinder. Sterilization by heat is not indicated, because of danger of reduction of the mercurial constituent.

Incompatible Antipyrin Prescriptions: Two prescriptions reported by Thomas Wilson *(National Druggist, 40,* 118) contained antipyrin, citrated caffein and water; one having sodium bromid as the fourth ingredient, while the other contained ammonium bromid. Both prescriptions instead of furnishing the expected colorless fluid were yellow-brown and study of the problem eventually showed that antipyrin is very sensitive to ferric iron (even 1 to 50,000) and that all commercial powdered citric acid (used for the citrated caffein) contained enough traces of iron to give the reaction. The remedy is to use only transparent crystals of citric acid in making citrated caffein.

Academy of Medicine of Cleveland.

OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION.

The forty-fifth regular meeting was held at the Cleveland Medical Library Friday, February 25, 1910, E. Lauder in the chair.

The program was as follows:

1. Drawings of the Nasopharynx in Infants, J. M. Ingersoll. Some of these original drawings showed the existence of adenoid growth before birth proving that they might be congenital. They also demonstrated the shallow pharyngeal vault in infants and that the ordinary curette is not the proper shape or size to remove those growths. W. J. Abbott, T. A. Burke, S. W. Kelly, S. H. Large and J. E. Cogan discussed the paper.

2. Demonstration of a Modified Simpson Tampon to Prevent Nasal Hemorrhage, M. D. Stevenson, Akron. This tampon was larger than the original, covered with thin rubber tissue and therefore much less painful to remove.

3. Report of a Case of Foreign Body in the Larynx, S. H. Monson. In the absence of S. H. Monson, W. J. Abbott read this paper and showed the larynx with a foreign body imbedded in it. The importance of always having an x-ray picture taken for the object's localization was forcibly impressed, and the utility of the bronchoscope for its removal was emphasized. The paper was discussed by S. H. Large, S. W. Kelly and J. M. Ingersoll.

4. Demonstration of the Pharyngoscope, M. Metzenbaum.

5. Alterations of Refraction in a Case of Diabetes, W. E. Bruner. This unusual occurrence could be explained, apparently, only by the fact that at the first examination the percent of sugar was high and this must have increased the density of the lens. At a later examination when the percent of sugar was much lower there was an increase in the amount of hyperopia.

MEDICO-PHARMACEUTICAL SECTION.

The fourth regular meeting was held at the Cleveland Medical Library, Friday, February 25, 1910, L. C. Hopp in the chair.

The program was as follows:

The Pharmacopoeia and its Revision, Prof. Joseph P. Remington, Philadelphia, Pa., Chairman of the Committee on Revision of the Pharmacopoeia. (Appearing in full on page 247.)

The Chairman, in introducing the speaker of the evening, said that the American Pharmaceutical Association stood for the higher ideals in pharmacy. The resident members of the organization had formed a local branch for the purpose of educating the public to the fact that there was considerably more to pharmacy than commercialism: it was a profession that was exacting in all its details. They also desired to show physicians that the pharmacists were more than mere venders of patent medicines, the very name of patent medicine being distasteful to the true pharmacist. They wished the physicians to come to them for whatever pharmaceutical information was desired. They were educated to this end and wished all to feel that such information could be had here in Cleveland. How to bring this about was the question asked at many of their meetings. The suggestion had been made that a Section in Pharmacy in the Academy of Medicine of Cleveland would be just the thing, and the thought was at once put into action. After conferring with a number of physicians, all of whom thought it a good thing, this had been done, and today there was in Cleveland the only medico-pharmaceutical section of a medical society in the country. The pharmaceutical members of the Section were proud of it, and in order to create a live interest in its work they had persuaded so eminent an authority as Prof. Remington to come to give an address upon a subject that would be uppermost in the minds of all pharmacists for the next three months.

T. Sollman opened the discussion with a paper upon the subject. (Appearing in full on page 253.)

N. Rosewater said that in deciding as to what drugs should be in the pharmacopeia we must still depend chiefly upon the clinical usage and results gained or observed in practise, and to a much less degree upon purely animal experimental work in laboratories where the observations of one period are proved to be based upon insufficient data as required by the next period. If we must depend on the verified and concordant results of the pharmacologist there would not be a dozen drugs in the next pharmacopeia. The burden of proof that a drug has no medicinal value, when generally reputed to be so, should be on the pharmacologist, and it ought not be discarded till its unworthiness is proved.

H. W. Rogers said that in dealing with this extremely broad subject the physicians and pharmacists should work in harmony and not at cross-purposes. Many drugs which gave good results were used purely empirically and this might possibly always be so. There was a very large field open to the pharmacologist in determining the mode of action of such drugs. The work of Starling had indicated how certain substances might act as activators upon certain tissues which in turn produced other bodies needed by other tissues. It should be borne in mind that the physiological action of drugs upon the human system might be radically different from their effects upon the lower animals, e. g., opium produced a very different result in a man and in a frog. There was a strong sentiment at present for better instruction in therapeutics and the profession was more and more coming to prescribe eligible preparations from the pharmacopeia and paying less attention to the dictates of the retail tablet man. While it was true that the average physician could not do much toward the revision of the pharmacopeia he could at least give good advice as to what might be of advantage in the treatment of disease.

H. V. Arny said he had noticed for the last four or five years some difference of opinion as to the way in which the revision of the pharmacopeia should be carried out. The two speakers were two of the most prominent exponents of the two different sides of the question and he was pleased to see how closely, after all, their views coincided. He was glad to hear that Prof. Remington was in favor of a reasonable degree of publicity as to the contemplated changes in the pharmacopeial revision. Whatever criticism had been made was based on the belief that no such publicity would be given and the pharmacists, especially the manufacturers, wished for an opportunity to voice their ideas as to the wisdom of any prospective changes.

The question as to what should be put in the pharmacopeia should be settled by the physicians and pharmacologists, not by the pharmacists. The Revision Committee surely did not wish to add new drugs to the pharmacopeia unless the physicians really wanted these drugs, but if such things were actually prescribed by physicians why not have them included in an authoritative work like the pharmacopeia? If the medical profession desired to limit the number of pharmaceuticals to 200 or 300 and would prescribe these only, the pharmacists would welcome the change, as it would save them keeping on hand a lot of useless stock.

W. T. Hankey regarded the pharmacopeia chiefly as a book of standards. If the physician demanded a great variety of drugs the pharmacist must have an authoritative standard by which to compound them. If physicians were going to continue to prescribe those drugs which the Committee on Revision considered should be dropped, they should certainly be retained.

L. C. Hopp said that a pharmacopeia of small size would be a fine thing for the pharmacist but it would be very difficult for him if the physicians continued to prescribe things not contained in it. The pharmacist's function was to compound the prescriptions of the physicians; the methods of preparation in the pharmacopeia should therefore be left to pharmacists while the physicians should say what drugs were or were not to appear in it. If the medical colleges would devote more attention to familiarizing the students with the pharmacopeia the detail man would not be so successful in promoting the use of proprietary preparations.

T. Sollman said that he did not wish to be understood as advocating the restriction of the contents of the pharmacopeia to the ultimate limit but he thought that all useless drugs and those seldom or never called for should be eliminated. He emphasized that the opinion of competent clinical observers should have the largest share in determining the admissions; but that the statement quoted placed no restrictions on the quality of the 5000 doctors.

Prof. Remington, in conclusion, said that Dr. Wood's statement in regard to brickdust was never intended to be taken seriously but had been used merely to illustrate his point. There were two extremes to be avoided in deciding what should be included in the pharmacopeia and one of them was well-illustrated by the provisions of the Cary bill which had been introduced into Congress some time ago by Representative Coudrey of Missouri, a well-known manufacturer of proprietary drugs. This bill had been taken up by some of the New York journals and they had even created some sentiment in its favor. It provided that the pharmacopeia should contain *everything* used for the cure of disease, whether in man or beast, and that *everything* be standardized. It also provided a penalty for any physician prescribing anything not in the pharmacopeia. The whole thing was absurd and would practically prevent investigations upon new drugs by the physician. The other extreme was the view of those who would eliminate almost everything from the pharmacopeia. In the next revision it seemed probable that the deletions would, in number, about balance the additions. Since 1840 various societies had been requested by the Committee on Revision to make a report of any suggestions they might have as to the revision of the pharmacopeia. The American Pharmaceutical Association and the American Chemical Society were making such reports and it was hoped that valuable advice would be received also from the A. M. A. The standards of purity in the pharmacopeia were not intended to be actually the highest theoretically but merely *a high standard of attainable quality.* Originally the standard of ipecac had been set too high and the small supply of "fancy" ipecac which reached the standard was insufficient to meet the demand, the standard had therefore to be lowered. Belladonna leaves and ergot were also placed so high that the ordinary supply of good drugs could not reach the standard. If the standard were set too high it was impossible at times, owing to bad seasons or unfavorable conditions, to obtain a sufficient supply of high-grade raw material. Some physicians and some chemists had advised the elimination of such articles as metallic iron and mercury: while the physician did not use them as such, the pharmacist had to do so in the manufacture of various preparations and hence the metals themselves had to appear in the pharmacopeia as ingredients; for instance blue mass could not be made without mercury, nor could solution of chlorid of iron dispense with metallic iron as a starting point in its preparation.

The following motion was then proposed and carried by unanimous vote: That in view of the valuable services of Maxwell G. Tielke in furthering the suppression of the illegal cocain-traffic in Cleveland, a communication from this Section be sent to the Governor of Ohio recommending the reappointment of Mr. Tielke upon the State Board of Pharmacy.

CLINICAL AND PATHOLOGICAL SECTION.

The sixty-sixth regular meeting was held at the Cleveland Medical Library Friday, March 4, 1910, J. S. Tierney in the chair.

The program was as follows:

1. Demonstration of a New Pneumatic Tourniquet, F. E. Bunts. This tourniquet had been made for the speaker by the H. H. Hessler Company. It was made of rubber and linen and consisted virtually of two long rubber bags fastened together along their inner margins, but connected at the middle by an opening through this fastening which permitted the air to circulate simultaneously in both tubes when inflated. This obviated one of the greatest difficulties experienced in the construction of a practical pneumatic tourniquet.

If it were made of a single rubber bag, the inflation would cause the superimposed turns of the tourniquet to roll off each other and thus release the constriction, while with the double tubes this could not occur. It had a tapering end which was tucked under the tourniquet after it was in place and the inflation with a bulb fixed it there. The bulb was connected with the tourniquet by a rubber tube with two stopcocks, one to permit of inflation and the other of deflation, as might be desired. As the tourniquet was loosely applied before the final preparation of the limb for operation, there would be no disturbance of the final arrangements in tightening the tourniquet, since this was accomplished simply by a few squeezes of the hand-bulb.

It could be cleaned and sterilized in the same manner as articles of similar material, such as the familiar obstetrical pad. One of its important uses should be in ambulances where the unskilled application of the Esmarch caused much suffering and sometimes serious injury.

W. B. Laffer said that recently he had seen an unusual result from the pressure of the wide pneumatic cuff of the Riva-Rocci blood-pressure apparatus. The patient, who was suffering from acute nephritis, showed a uniform, finely mottled, subcutaneous ecchymosis over the whole arm below the level at which the cuff was applied, with a well-defined line corresponding to the lower edge of the cuff.

G. E. Follansbee asked whether there had been any difficulty in securing sufficient pressure with this tourniquet when it was applied to the thigh.

F. E. Bunts, in conclusion, said that the case reported by W. B. Laffer was an extraordinary one and that with an ordinary tourniquet the result would probably have been far worse. He had found his tourniquet very satisfactory with the arm but he had had no opportunity of trying it upon the thigh: he had no doubt it would answer since the Riva-Rocci apparatus would control the circulation when applied to the thigh.

2. Traumatic Insanity with Report of Cases, H. H. Drysdale. (To appear in full in the Journal.)

J. E. Tuckerman said that he considered that the first case described should not have been allowed at large for so long a period, considering the character of the symptoms presented.

H. H. Drysdale replied that the patient's family had resisted all their efforts to have him placed under institutional treatment.

3. Thrombo-Angiitis Obliterans, with Report of Two Cases, Richard Dexter. (To appear in full in the Journal.)

W. B. Laffer stated that he thought there were too many different pathological conditions included under the heading of thrombo-angiitis obliterans. Silas Cohen had, under the term "vasomotor ataxia," included a number of disorders in which there were changes in the blood-supply of parts. He had included cases of migraine, urticaria, erythromelalgia, epilepsy, Raynaud's disease, etc. In Raynaud's disease there was usually high blood-pressure and often, too, in nephritis, but unless the arteries were occluded it was difficult to understand how necrosis could occur. A vasomotor spasm or arteriosclerotic change might explain the occlusion of the vessel. Vasomotor spasms were the cause of many of these local occlusions leading to paralysis of a limb, aphasia, or a circumscribed area of gangrene. He had recently seen a hemiplegic patient who showed marked trophic changes of the leg with edema and gangrene of the little toe. It was well-known that in syphilis and other infections a circumscribed gangrene of the skin could occur.

In the last case described by the essayist, the patient, according to the report, was suffering from a heart break-down and the lesions found in the lungs and other organs at autopsy might have been due to emboli arising in the diseased heart, probably from a clot in the right auricle or ventricle. Infarcts in the lungs and kidneys were often seen in cases of right heart involvement. Stewart reported, with photographs, the occurrence of gangrene of a toe in each of three children of the same family. Intermittent claudication, so called, and other similar vasomotor disturbances were, perhaps, most often due to a vasomotor spasm. One should not forget that many of the cases of circumscribed necrosis, such as mal perforans seen in tabes, paresis and diabetes and the localized necrosis seen in syringomyelia, were due to trophic disturbances depending on lesions of the nervous system.

R. Dexter said that the pulmonary lesions in the first case were considered thrombotic rather than embolic as the heart-valves were normal. There seemed to be no damming back of the blood to account for the thrombosis since the veins were unobstructed and the heart showed no incompetency. The real cause of the condition therefore was obscure but, in the second case, it might be accounted for by a primary thrombotic process.

4. Normal Saline Solution as a Dressing in Casualty Surgery, Geo. E. Follansbee. (Appearing in full on page 262.)

R. Updegraff said that the use of saline solution for continuous irrigations was now generally recognized. He considered that too strong a solution of bichlorid had been used in the first series. There might be skins that would stand the application of 1-2,000 bichlorid but in many normal cases a dermatitis would be set up. If a strength of 1-8,000 or 10,000 had been used the results in the two series would be more comparable.

J. E. Tuckerman said that the use of bichlorid solution invariably gave him a dermatitis; he therefore never used it now on himself or on his patients. Hospital nurses were apt to believe that if a little bichlorid were good a little more would be better.

F. E. Bunts said he was glad to hear of anything that would do away with mistakes of technic that had become more or less established. At one time he had used carbolic solution in dressing wounds but he had seen such bad results from it that he had abandoned its use. A few years ago, in the Massachusetts General Hospital, some of the surgeons had abandoned the use of antiseptic solutions and used only plain sterile gauze for dressings; the results had been very good. He and his associates still used bichlorid solutions in this class of work except in injuries around the eye or face when boracic acid was employed. He considered that all accidental wounds, from the very nature of the accident, should be considered infected and that the use of an antiseptic to combat the infection was indicated even when the irritation of the tissues from the antiseptic was taken into consideration. The solution should not be too strong, 1-2,000 was injurious, 1-5,000 or 6,000 was quite strong enough and with delicate skins 1-12,000 should be used. As in operation-wound treatment, the ultimate results in accident-wound treatment were largely dependent upon the first dressing. Not only the surrounding parts but the wound itself should be thoroughly cleansed. Salt solution was excellent in clean wounds but if a wound was probably infected he preferred the use of an antiseptic.

M. Coplan said he had found salt solution better than boracic in injuries about the mouth but he preferred boracic for burns. The tablets for preparing salt solution were very convenient.

H. C. Bliss thought that the combination of bichlorid with tartaric acid gave the best results.

G. E. Follansbee said he had not looked up the literature upon the subject but his results with salt solution had been so much better than with bichlorid that he thought his experience might influence some who still used bichlorid as a routine. He thought that an antiseptic solution strong enough to inhibit the germs could not help but injure the tissue-cells. The cleansing of the wound was quite as important as the variety of solution used. He did not like the use of dry gauze since the granulations were apt to grow into the meshes and bleed freely when the dressing was removed.

ACADEMY MEETING.

The seventy-fourth regular meeting was held at the Cleveland Medical Library, Friday, March 18, 1910, the President, C. B. Parker, in the chair.

The report of a previous meeting of the Council was read by the Secretary and was, in part, as follows:

The Council of the Academy of Medicine of Cleveland met Monday, March 14, 1910.

The following were elected to active membership: Albert M. Dunlap, George A. Allison, R. M. Manley, Chas. E. Richards. To associate membership: Willis T. White, Attorney. The name of R. L. Jett, for active membership, was ordered published.

The report of the Committee to investigate the subject of vasectomy was received. The Committee was instructed to communicate with the Superintendent of the Indiana State Penitentiary on the subject and, if advisable, invite him to give an address before the Academy on the subject.

The report of the Committee to recommend amendments to the Constitution was received and accepted and the proposed amendments were ordered published.

A communication from C. A. Hamann, Secretary of the Cleveland Medical Journal, regarding the amount to be paid to the Journal for the coming year was read. It was voted that the Academy pay the Journal $1.00 for each active member for the coming year.

The following resolutions on the Bill now pending in the Ohio State Legislature, known as the Optometry Bill were adopted and ordered to be referred to the Legislative Committee with instructions to send copies to the various legislators.

Whereas, a Bill is now pending in the Senate of the State of Ohio known as Senate Bill No. 51, the purpose of which is to give State recognition to the practise of optometry, and

Whereas, optometry, as now understood, is essentially and actually a special line of medical practise, be it

Resolved, That the Members of the Council of the Academy of Medicine of Cleveland do most decidedly oppose the passage of this bill as dangerous and deceptive; (1) in putting the seal of approval on incompetent practitioners in an important branch of medicine, since failing sight is the first symptom of the most destructive disease of the eye which glasses cannot cure; (2) because the sufferer from destructive eye-diseases is lulled into a feeling of security and safety by an attempted refraction until the time of remedy is passed; (3) because no refraction of the eye is or can be complete without an examination of the interior of the eye; (4) because it is impossible to correct squint without a mydriatic, neglect of improper correction leading to blindness in the turned eye; (5) because it is a direct violation of the medical practise act; (6) because it is a fraud upon the public and contrary to public safety.

The following report of the Committee appointed at the previous meeting of the Academy to take suitable action upon the death of Henry Kirke Cushing was presented.

To the Academy of Medicine of Cleveland:

Your committee, appointed to take suitable action on behalf of the Society on the death of Dr Henry Kirke Cushing, beg to submit the following:

Henry Kirke Cushing was born in Lanesboro, Mass., July 29, 1827. His father, Dr Erastus Cushing, in 1835 came with his family to Cleveland where he engaged in active practise for 40 years. Henry Kirke Cushing received the degree of Bachelor of Arts from Union College in 1848. Following in the steps of both his father and grandfather he chose medicine as his profession and graduated from the University of Pennsylvania in 1851.

He was successively Professor of Obstetrics and Diseases of Women and Children, Professor of Gynecology, and Emeritus Professor of Gynecology in the Medical Department of Western Reserve University. He was, to within a few years ago, a trustee of Western Reserve University, which in 1884 conferred upon him the honorary degree of Doctor of Legal Laws. He served in the Civil War as Surgeon Major in the Seventh Ohio Volunteer Infantry, and subsequently took a lively interest in, and was a prominent member of the Loyal Legion of the United States. He retired from active practise about 20 years before his death, which occurred on February 12, 1910.

Dr Cushing stood for all that was high and noble in his chosen profession, and the dignity of that profession he maintained at all times and in all places; not offensively nor ostentatiously, but quietly, soberly and with a manner, impressing everyone with whom he came in contact, that he represented a profession that was entitled to the respect of all men. He has left an example which every young man would do well to emulate. His ideals were the highest; his conduct such as those ideals would naturally inspire; his attainments such as only a man of great ability and untiring industry could possess.

In the medical societies, especially the smaller ones which he seemed particularly to enjoy, he was always at his best. His extensive reading and his large and varied experience made him able to speak intelligently and authoritatively on any subject.

In the sick room his perfect self-control and complete knowledge of the case in hand, as well as his strong sympathy for the sufferer made him a tower of strength on which the patient could lean and feel a safety and confidence that could not be otherwise than helpful.

He was an ideal consultant, resourceful and always helpful and tactful. The attending physician was always made to feel that he was present to do his utmost to help and never to criticize, and if, in his careful analysis of the case, he discovered anything that the attendant had overlooked it was made known in such a way that no offense was ever given, nor was the patient's confidence in his physician in any degree lessened.

These characteristics of Dr Cushing made him loved by those who knew him intimately and admired and respected by those with whom he was less closely associated. All in all he was a remarkably well-rounded practitioner of medicine, an ideal family physician of whom there are too few in the present day.

The influence of a career is best estimated by considering the personal force of the individual acting upon his environment. It will be difficult indeed for the younger members of the profession to appreciate medical conditions at the time Dr Cushing began practise. It was indeed a critical period—a period characterized by a low average standard of preparation for medicine; medical relations were too frequently personal; medical societies were poorly developed; medical education was in the depths, being practically entirely in the hands of proprietary schools. This was not peculiar to Cleveland, but was typical of conditions all over the land. The medical communities in which the prevailing sentiments were for better ideals passed through this critical time and reached a higher plane, but those in which such conditions were otherwise remain today undeveloped. It is fortunate for our profession that during this period the strong personal and powerful influence of Dr Cushing was exerted at all times toward the elevation of professional standards.

Besides being an eminently successful practitioner his energies were ever directed toward the advancement of scientific medicine; a fitting tribute in this respect was the naming in his honor of the new Laboratory of Experimental Medicine of the Western Reserve University.

On this occasion we acknowledge our large debt of gratitude for his beneficent and enduring influence upon Cleveland medicine and for the example of his life which will ever serve as an inspiration to us all.

Respectfully submitted,

WILLIAM H. WEIR, Chairman.
H. J. LEE,
GEORGE W. CRILE.

The program was as follows:

1. Ureteropyelitis in Pregnancy and the Puerperium, Oscar T. Thomas. (To appear in full in the Journal.)

A. W. Lueke, in the discussion, said that some 15 years ago Escherich had described cases of colon infection of the renal pelvis and ureter in children, in which he believed the infection had traveled through the intestinal wall and the pelvis of the kidney and then down the ureter, constituting a descending infection. Probably many cases of ureteropyelitis in the puerperium could originate in the same way.

2. The Clinical Application of the Serum Diagnosis of Syphilis, Homer F. Swift, New York. (To appear in full in the Journal.)

W. T. Corlett said that anything new in medicine was apt to be either too strongly praised or thoughtlessly condemned. The speaker had taken a very conservative stand and was to be congratulated on obtaining results that few other observers had been able to secure. Formerly he had had a general idea of the test but he had regarded it as unreliable, owing to the large proportion of failures reported, especially in those cases in which a positive reaction would have furnished the greatest aid. Some time since, however, he had followed it up carefully in the laboratory and wards at Bonn and had been strongly impressed with its great practical value which he considered even greater than the discovery of *Treponema pallidum* by Schaudinn and Hoffman. The demonstration of the specific organism, while very valuable, was not practicable for everyday use. He had seen the test successfully demonstrated in one man who gave no very definite symptoms but who was manifestly very ill, pale and weak. He was thought to have malignancy of some viscus but no suspicion of syphilis was entertained. The serum-test proved positive in this man, improvement at once followed appropriate treatment and a contemplated operation was not performed. He considered the diagnosis the most important thing in treating syphilis. Many physicians, on discovering the initial lesion, even though in doubt as to the correct diagnosis, at once instituted treatment: later on it was impossible by the ordinary findings to make a positive diagnosis in such a case, but the Wasserman reaction was an invaluable aid. In another class of cases that had taken treatment for variable periods, even up to three or four years, the patients wished to know when they were cured. There was no uniformity in the views of different men as to the length of treatment necessary, but the conservative man erred on the side of safety. The serum-test would help greatly in expressing such an opinion. He had been much interested in the speaker's remarks upon leukoplakia, a very obscure condition, and the results obtained were of the greatest significance. That Colle's law was simply an expression of the fact that latent syphilis existed had been confirmed by the Wasserman reaction. One point had not been mentioned and that was the technical difficulties in performing the reaction: in time it might possibly be simplified but at present the average physician would have great difficulty in applying it.

C. B. Parker said that he had been fortunate in having been for some time with Mr. Jonathan Hutchinson who was perhaps the greatest English authority on syphilis and who would never make a positive diagnosis of syphilis from the initial lesion. There he had learned to be exceedingly careful in making such a diagnosis. Many men, however, had no hesitation in so doing. It was most fortunate that now we had a method which bid fair to give far more accurate results. He hoped that ultimately the technic of the test would be simplified.

W. I. LeFevre said that the diagnosis of syphilis was a subject of great importance. He thought the old saying was very true that "the physician who could correctly diagnose every case of syphilis could correctly diagnose every skin-disease," however it usually took several years for one to fully realize this. He remembered when, as a third year student, he could correctly diagnose every case of syphilis, and then even in the earlier years of his practise, had any such cases, perchance, presented themselves, he was sure he could have made a correct diagnosis in the majority of them, but now, after the years had rolled around, he sometimes wondered if he could correctly diagnose a single case of this disease. It seemed rather strange that some people would come to the physician to be told what the real trouble was and then withhold important facts bearing upon the case. Sometimes, perhaps, there was an excuse for this as in the case of railroad men who were deprived of their pay from the relief fund if they had a disease of a so-called private nature, they at least had a financial excuse. The diagnosis of syphilis was of great moment and he thought we could hope, through the efforts of such men as the speaker, to see the method simplified and perfected.

H. M. Metcalf asked whether the test could be made from a small amount of dried blood such as could be sent through the mail for the purpose of having a Widal test made.

P. A. Jacobs asked what effect the interval of time between the withdrawal of the blood and the making of the test had upon the intensity of the reaction. In opsonic work the longer this interval, the less was the efficacy of the opsonin.

M. Metzenbaum asked whether it was possible to send blood or serum to New York, for instance, from here in order to have a test made.

H. F. Swift, in conclusion, said that he had purposely avoided all reference to the complicated details of the laboratory technic. Dried blood could not be used: at least 1 c. c. of clear serum was necessary and therefore 2 c. c. or more of blood. Enough could be obtained from the ear although the importance of the test usually warranted the aspiration of the blood from a vein. The Nogouchi test was at first oversensitive but since it had been modified it was more easily applicable and with inactive serum was just as reliable and more sensitive than the Wasserman reaction. In making it, human red blood cells were used instead of sheep's cells and the small quantity needed could be readily obtained. He wished to sound a note of warning as to the view that these tests were simple: they were the most complicated in the whole range of immunity and no one should attempt them who was not properly prepared to do them accurately and thoroughly. The technic was more difficult than in opsonic work. As to the age of the blood, he liked to receive the specimens within 12 hours and to make the test within 48 hours. If the serum were separated from the clot and kept on ice, it would remain effective much longer than if left in contact with the clot. If a sample were to be sent any distance the preferable way was to separate the serum and seal it up in sterile glass tubes: in such samples sent from a distance positive results could be regarded as conclusive, negative results were, however, questionable. The keeping qualities of the serum varied; satisfactory results had been obtained in samples even one year after they were taken. The test was a most valuable one and had thrown light on many obscure conditions in all parts of the body. It was of value not only in dermatologic practise but in every branch of medicine, in every specialty and in all clinics.

Book Reviews.

Social Service and the Art of Healing. By Richard C. Cabot, M. D., Assistant Professor of Medicine in the Harvard Medical School, Assistant Visiting Physician at the Massachusetts General Hospital. New York, Moffat, Yard and Company, 1909, pp. 192, price $1.00 net.

Whatever may be said as to aptness of title this small volume is of the greatest interest and suggestiveness to the medical profession and to the social worker. It may be regarded as a pioneer volume in a field where but few investigators as yet see anything of value. That which many members of the medical profession regard as an encroachment, Dr Cabot, with keen insight, discovers to be an opportunity for teamwork which will produce the highest efficiency. He undertakes in this book to exemplify "three forms of team-work which are now tending to ennoble medicine." With convincing clearness he describes the changes whereby medical, social and educational work are being drawn together for the public good. He pleads for better team-work on the part of doctor, educator and social worker and also for greater efficiency in hospital and medical work. Preventive medicine must, of necessity, receive increasing emphasis.

Two chapters that are of special interest to physicians are entitled "Backgrounds and Foregrounds in Medical Work" and "Team-work of Doctor and Patient Through the Annihilation of Lying." Social workers will be particularly interested in the chapter on "The Nature of Social Work, Especially in its Relation to Medicine." The definition of social work as "the diagnosis and treatment of character under adversity" gives a new view of this rapidly growing profession. It will seem to many social workers entirely too narrow a view of their work. They will be inclined to hope for an equally competent and authoritative discussion of social work from other points of view—for example, from that of the lawyers, of the clergyman and of public officials, particularly such officials as are concerned with the care of the public health, with the administration of public charities and with the administration of the police power of the state.

This is a book by a physician who is thoroughly alive to some important social and professional changes that are now in progress.

J. E. C.

Handbood of Therapy. Cloth. Price, $1.50. Pp. 421. American Medical Association, 1910.

This book has been written for the general practitioner and student and has been put in a convenient form so that it can be carried in a satchel or pocket. It consists of selections from a series of articles on treatment that have appeared in the Journal of the American Medical Association. Coming from such source, one would expect it to be authoritative in its teaching.

It was therefore disappointing to find in speaking of the treatment of acute rheumatism this statement. "Any food or drink that tends to cause intestinal indigestion or fermentation is likely to precipitate a lurking rheumatism." It would be interesting to know what proof the author had for such a statement. A number of the prescriptions given throughout the book are of the "shot gun" variety containing from six to eight ingredients. We find also on page 398 a formula containing guaiacol, eucalyptol, menthol, thymol, oil of wintergreen and oil of peppermint to be used as a spray for "disinfecting" a sick room. If the author had called it a "deodorant" we could understand its use. These are a few of the inaccuracies found throughout the book. It cannot be recommended for the purpose for which it is intended. J. P.

The Essentials of Chemical Physiology. For the use of students. By W. D. Halliburton, M. D., LL. D., F. R. S., Fellow of the Royal College of Physicians, Professor of Physiology in King's College, London, Author of "Textbook of Chemical Physiology and Pathology." Seventh edition. Longmans, Green & Co., New York City. Price, $1.50.

The present edition of this well-known and popular work has been largely rewritten. The author's long service as a teacher and critic in physiology and biochemistry allows of a decisive and accurate text, thoroughly abreast of the subjects discussed, at the same time simply and well written. The work is divided into elementary, advanced and appendical courses with appropriately selected experiments. Like all previous editions it has always furnished reliable facts and the more advanced theories, and should always prove a welcome companion for orientation in the life of the busy practitioner, to impart good principles to the student, or for self-study. J. G. S.

An English Handbook to the Paris Medical School (with map). By A. A. Warden, M. D., Visiting Physician to the Hertford British Hospital, Paris. Second edition. Price, 50 cents. P. Blakiston's Son & Co., Philadelphia, Pa.

This compact booklet presents in outline form much useful information regarding the medical postgraduate facilities to be met with in Paris. Paris with its large number of hospitals, to which physicians are freely admitted, affords great clinical possibilities which are too little appreciated by the profession in America. In serving to call attention to some of the more important of these hospitals and the prominent men connected with them, as well as serving as a handy schedule to the various clinics held in them, this volume should prove a valuable medical guide book. C. W. S.

Diagnostic Therapeutics, a Guide for Practitioners in Diagnosis by Aid of Drugs and Methods other than Drug-Giving. By Albert Abrams, A. M., M. D., Consulting Physician to the Mount Zion Hospital and the French Hospital, San Francisco; Formerly Professor of Pathology and Director of the Medical Clinic, Cooper Medical College (Medical Department of Leland Stanford Junior University), San Francisco. With 198 illustrations and 1040 pages. Cloth, price $5.00. Rebman Co., New York, 1910.

The author has succeeded admirably in his treatment of the relationship of the subjects which the title implies. It differs somewhat from the usual works on therapeutics in placing special stress on the reciprocal character of diagnosis and treatment, and one is impressed with its essentially practical character throughout. Six chapters comprise the work, including those upon diagnosis, drugs in diagnosis, and the action of drugs in disease, as well as in the etiology: in addition methods other than drugging in diagnosis, etiologic diagnostic therapeutics, and the diagnosis of visceral insufficiency are considered.

As to the injurious effects of drugs given for therapeutic effects and exclusive of their special toxicology he applies the apposite term "medicamentons diseases." Referring to the use of so-called mixed treatment in syphilis he states that "we are practically using one drug together with its antidote." He quotes Heinrich Stern as to the early occurrence of iodism in nephritis owing to the insufficient excretion of the iodids by the kidneys. The division devoted to methods other than drug-giving is also quite full and complete. The book embodies much concerning the newer remedies and methods of value, condensing a great amount of information within a moderate compass. The last chapter of nearly 300 pages considers the diagnosis of visceral insufficiency, including the circulatory and respiratory systems, the glandular organs, etc.; the clinical worth of drugs and methods as indicated or interperted by diagnosis is quite clearly shown, and the work will prove a most valuable aid in treatment. An exhaustive bibliography and a complete index conclude the volume.

J. B. M.

Gall-Stones: Their Complications and Treatment. By A. W. Mayo Robson, D. Sc. (Leeds), F. R. C. S. (Eng.) and P. J. Cammidge, M. D. (Lond.). Henry Frowde, Oxford University Press. Hodder & Stoughton, Warwick Square, E. C. 1909.

A clear and concise expression of the present-day knowledge concerning gall-stones. The diagnosis has been quite fully treated. Chapter VI, describing the pathological changes and complications due to gall-stones, is worthy of note. The rationale of the different surgical procedures is especially sound. The postoperative treatment is slightly antiquated.

H. G. S.

Acknowledgments

High Frequency Electric Currents in Medicine and Dentistry. Their Nature and Actions and Simplified Uses in External Treatments. By S. H. Monell, M. D., New York. Finely illustrated with special instruction plates. Wm. R. Jenkins Co., New York.

The Conquest of Consumption. By Woods Hutchinson, A. M., M. D. Houghton Mifflin Co., Boston, Mass. Price, $1.00 net.

The Propaganda for Reform in Proprietary Medicines: Sixth Edition. Containing the various exposés of nostrums and quackery which have appeared in the Journal of the A. M. A. Price: Paper, 10 cents; cloth, 35 cents. Pp. 292. Illustrated.

New and Non-official Remedies, 1910. Containing descriptions of the articles which have been accepted by the Council on Pharmacy and Chemistry of the A. M. A., prior to January 1, 1910. Press of the A. M. A. Pp. 256. Price: Paper, 25 cents; cloth, 50 cents.

Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States for the Fiscal year 1909. Government Printing Office, Washington. 1910.

Correspondence.

Bella Bella, B. C., Feb. 25, 1910.

To the Editor of the Cleveland Medical Journal:

As I have learned that an article on our work here might be of interest to your readers, I take pleasure in forwarding the following sketch.

In the year 1898 I was sent by the Canadian Methodist Church to take charge of an Indian Mission at Bella Bella, British Columbia, situated on a small island off the coast about 300 miles north of the city of Vancouver, and the same distance south of Port Simpson. This village of about 700 indians and 100 whites, was then the most important northern point on the Canadian Pacific Coast, and there had been a doctor and hospital here for some years. A mail steamer plied between Vancouver and Port Simpson twice a month, and one or two other steamers made trips at irregular intervals, and as Bella Bella was a halfway point on the main steamboat channel, the Church had decided to place another doctor in charge of a hospital here, to minister to the needs of the Indians and whites scattered along the coast. Bella Bella itself had an Indian population of about 300, and there was one white-man in charge of a store and post-office,—one of the original trading posts of the Hudson Bay Company, turned over in recent years to a former employee, who bought out the business.

The village nestled along the sloping hillsides of the sheltered McLaughlin Bay, but as most of the land in the bay had been given by the Government to the Hudson Bay Company, the Indian houses were very much crowded together.

In the old days one large house—built with a massive framework of carved cedar posts, and walled in and roofed with boards split off the cedar tree—would accommodate as many as from 50 to 100 people, who were as one family, being members of a common crest—either wolf, eagle, bear, whale or some other of the crests common to all the Indian villages. There was one door of entrance, a large central fire, with a hole in the roof for the smoke to escape—when it felt so inclined—and arranged around the walls were the sleeping quarters of the different families. At times they ate together using the central fire at which to cook the food, but frequently the different families had their own fires close to their sleeping quarters, where their meal was prepared. The head chief of the crest was always given the choice portion of the food of which the different families of his household were partaking, and the fires were kept up by those of lowest rank. There were no windows, but the wind, coming in through the numerous cracks and passing out through the hole in the roof, provided fairly good ventilation.

With the coming of the first missionary in 1880 came the desire for white-man's houses, and these individual homes, at the time of my arrival, had entirely supplanted the old-time crest-houses,—except when the Indians went to their camps to hunt and fish, when they had recourse to the original type of dwelling. The Indian land in the bay, not providing room for more houses, some had been built, by consent, on the trader's land, and after an unsuccessful attempt to get the Government to purchase outright a portion of this for their use, the Indians, somewhat annoyed, decided to remove to a new site about two miles farther north, where they could have plenty of land and establish their own trading stores.

This moving was under way in 1898, so that while I found a fairly comfortable mission house, day school and church on the mission land, a move was to be made to the new site the following year. I "batched it" for eight months; did my own cooking, washing, scrubbing, ironing, etc., and then got married, and the change was decidedly for the better. The following year we built our house at the new town, and while we had the hardships incident to starting a home in the woods, we now have a village of about 70 homes, a day school, good church, recreation hall, hospital and tuberculosis tent-cottage, a steam sawmill plant, and a 20 foot wide plank sidewalk about half a mile long extending through the village. All the work has been done by the Indians, their own homes being quite a credit, and the general appearance from the passing steamboat is that of an ordinary white village. Most of the houses have linoleum or oilcloth on the floor of the sitting room, walls papered, wood work stained, hanging lamps, good stoves, chairs, tables, sewing-machines, gramaphones, some pictures,—and one woman even has a canary, and another a parrot! The young people nearly all understand English and a few of the young men take Vancouver papers. We have a brass band, 15 or 20 gasoline launches built and operated by the Indians, and four Indian stores. They dress well, live well, and earn good wages at logging, fishing, trapping, boat-building, carving and carpenter work. While I was alone 11 years ago, our staff now includes a lady school-teacher, three nurses, my wife and two boys, and two young Japanese to help in kitchen work. We are just as safe as we would be in any white community of the same size, and often leave our doors unlocked, with no disastrous consequences. My duties include those of pastor of the church, doctor, medical health officer, coroner, magistrate, and general advisor to the whole flock, but it is probably with the medical work you will be more interested.

I found the Indians acquainted somewhat with white-man's medicine, as the missionaries before me had dispensed the simpler remedies, but it took us some time to understand one another. In the first place I had to learn that the Indian does not wish to wait long for results: the medicine must be strong to satisfy him. As soon as he takes sick he wants a swift purge. I gave the ordinary dosage but results were disappointing, and I had to administer croton oil to a couple of strong fellows, who had little the matter with them, in order to inspire confidence. The head chief came for pills one night, and said my medicine was never just strong enough. I gave him six Pil. Cath. Co., active, (P. D. & Co.) and that night was called to attend a Japanese, who had accidentally shot himself while duck hunting, but who was dead when I reached him. His friends desired to have him buried in the Indian graveyard on another island about three-quarters of a mile across the channel, so next morning I went to consult the head chief about it and found him pacing the floor. He said, "I haven't slept all night,—have been going out all the time,"—and he was still busy. He declared he couldn't go to the graveyard with us, but on reconsideration told me when we were all ready in the boats to send for him, but said rather dubiously, "perhaps I can make the island." He has never since asked for something strong, and all are now learning to appreciate something milder, such as calomel in divided doses, phenolphthalein, and cascara,—although of their old standbys, a 100-lb. keg of salts and a five gallon can of castor oil, disappear during the year.

A favorite with the old people, I found, was sea-water treatment. Seated beside a bucket of sea-water, with a big pan alongside, the patient slowly drank his full capacity, and when this was returned he loaded up again and again until it came up no longer bile-tinged, then fresh water was drunk in copious quantity and after free bowel-movements, he felt like a new Indian. This remedy is plentiful and cheap, and agrees very well with the strong ones. The coast Indian leads a sedentary life, travelling mainly by water and so walks little, and the dry native foods, formerly their main diet, such as smoked salmon and halibut, dried clams, herring spawn, and berries, and the inner bark of the hemlock pounded and pressed into cakes, predisposed to constipation. As they now use more of our foods, the need for the stronger purgatives is disappearing.

The first operative case was an Indian boy, from a village 75 miles away, who had a psoas abscess. The operation was done in an Indian house, one of the women heating water. All the utensils necessary I took with me. A middle aged Indian, who understood English, gave the chloroform, and everything passed off well.

The next was a baby brought in from camp in great distress, with the side of the head bulged out from an abscess of the middle ear. The Indian Agent was visiting me at the time, and he made his first attempt at administering chloroform while I opened the mastoid. In all cases in which I had an untrained assistant I put the patient under the anesthetic myself, and then went on with the operation while he kept the patient under. The next case was not so successful. I wished to do an iridectomy on an old woman who was suffering severe pain from glaucoma. Not wishing to risk a general anesthetic we used cocain. A young Indian was interpreter, and I operated in their own home. Just after the section had been made, the old woman, in spite of all previous warning, winked and squeezed the eye so vigorously, that she displaced the speculum and out came the lens and a little of the vitreous. *This completed the operation,* and while I had an anxious time of it for some days the results, on the whole, were fairly satisfactory to them. One has to be careful in the selection of operative cases, as a few bad results, causes them to lose confidence. Some of them fear the anesthetic more than the operation itself, and we had one old man whose foot was severely cut, who gave not the slightest evidence of pain while we amputated his toe, and repaired the extensive injury. The younger ones do not stand the pain as well as the older fellows.

We had our first abdominal section after we had moved up to the new town, but before our hospital was built. It was done in the office, with the Indian anesthetist and a nurse and the school-teacher for assistants. I had been called by the patient's friends to see her a year previously, but she refused to be examined, and would not talk to me. There was a very foul odor in the room, and she was so doubled up she could not walk. She was a widow, and the gossip was that she had become pregnant and a miscarriage had been attempted which had not been a complete success. When at the end of a year she sent for me, there was the greatest abdominal distension I had ever seen. She felt she would soon die, and, giving a guarded prognosis, I attempted the operation. We opened into a cyst and removed a great quantity of muddy-looking fluid, but there were so many adhesions that I found it impossible to remove it, and everything was so matted together, that I could not distinguish what was ovary and what uterus. The patient did not stand the operation well, and we were content to close the opening made in the cyst wall, and the abdominal incision. The wound healed perfectly but she died in her home a month later, and for fear of bad odors before she was buried, they consented to my removing the abdominal contents, and substituting print, of their providing. Everything was matted together, and there was a large very foul abscess deep down in the pouch of Douglas. I afterwards took the specimen to Toronto, and gave it to a pathologist, who could not macroscopically distinguish uterus and ovary We were refused several abdominal operations following this experience, although the blame was placed on the patient.

There is difficulty in always getting a postmortem. I approached the husband of an old woman and asked to be allowed to make a little incision to show them that my diagnosis had been correct. He said it was bad enough to have her die once without killing her twice, and this closed the conversation.

The old medicine-men frequently performed postmortem examinations, and by a little sleight-of-hand were able to demonstrate in one of the vital organs a bit of stone, bone or other foreign body which had been introduced by the magic of a rival, and having resisted the skill of the medicine-man treating the case, had caused the patient's death. He thus saved his reputation somewhat.

The Indian girl menstruates at about 12 or 13 years of age, and its first appearance is a great event in her life. She is now a woman, eligible for marriage. She must sit with her legs drawn up until the flow ceases,—even in sleep she must not extend them. She must also fast, as great calamity will come upon herself and family if she partakes of food. The object is to impress upon her that she must now conduct herself with greater propriety, and cannot longer be a harum-scarum girl. The fast is broken by a feast to which the villagers are invited, presents given, and the momentous event publicly announced.

The immorality of the whites is now one of the greatest hindrances to morality among the Indians, and the wide-open red-light districts of our coast cities are worse than anything found among the natives. Some of the younger men have visited these resorts of recent years, and now know by personal experience that a certain class of white-women also have their price. It is hard for them, under the circumstances, to believe we really have a strict moral code we live up to. An Indian came to consult me about securing a divorce, as his wife had run away with a half-breed from another tribe. I asked him if he himself had been keeping straight, and he replied, "Well, not too much. Just all the same as white-man."

There is not now as much venereal disease as formerly, in fact I treat it more among whites and Japanese than Indians. It is now the tertiary manifestations of syphilis that are mostly in evidence.

In 1902 we built our hospital, the Indians putting it up by free labor. They had promised to do this if I secured the lumber and while they were not at first enthusiastic when the lumber was really on the ground, it remained there until they were. It is only a cottage building with 11 beds, and our tent-cottage has two beds for consumptives. This is not enough for our present needs, and we are considering the erection of a new hospital. We have a summer branch at Rivers Inlet, a fishing center 75 miles to the south, where there are seven salmon canneries. We move there during the three summer months, closing up at Bella Bella and taking our patients with us on the steamer. Here we have a much better hospital, built in 1906 to replace a smaller one destroyed by fire. It accommodates from 20 to 25 patients. It is difficult, with our limited quarters at both hospitals, to properly classify our patients, as we have whites, Japanese and Indians, with an odd Chinaman or Hindoo to give variety. During the past year the Indians have not made up the major number of our patients, and only about one in five are from Bella Bella. As the coast is developing very rapidly this will be more marked in the future, and old conditions will radically change.

We had difficulty in getting the Indians to pay for medical or hospital treatment. They thought we should give it to them gratis. We have sought to teach them independence, and while our charges are very small, and we never refuse treatment to any, we will collect in hospital and office, from Indians, this year about $800.00.

Our hospital is on the same footing as the other hospitals in the Province, and we receive a grant estimated on our total days attendance. My own salary and that of the nurses is paid by the Methodist Church, and all my medical fees I turn in to the hospital account, and these, with the amount collected from the canneries, the government grants, and receipts from pay patients enable us to be self-supporting.

The Indians at first found it hard to adapt themselves to hospital treatment. Some objected to the beds (the regulation white enamel ones), the constant movement of the springs giving them no rest and they would have preferred the floor. One old fellow refused to come in as he was afraid he might fall out of the bed at night and break his bones, as the beds were so high off the floor. One, from a southern village, was put on restricted diet and his stomach washed out daily. He put up with it for awhile, but one day the tube became plugged with some dry salmon, which was not on his bill of fare, and he admitted he was going out to get a square meal from some friends to augment our scanty diet. He shortly concluded that he would return home, while he still had strength to get there, being persuaded that he could not hold out on such short rations. It has been a matter of education with them, and as a rule they now come in prepared to conform to whatever we think necessary.

I receive a goodly number of letters describing symptoms and asking for treatment. Here are some samples.

"Dear Sir Dr Large—Please have you any medican for Pains headake. I have such a Pains in my body. Im been in bad for 4 days days and thought I'll drope this few lines if you kindly send me you know what is good for Pains. Im sick is Pains headacke and Rumitis tried feeling stiff out of joints, &c."

"R. W. Large.—Dear Sir will you please sent me some sharfe medicins to Ruft my eyes on also medicins to cut fingers. I have a sick Eyes about one week so kindly sent."

The next is from a man who complains that as a result of eating the hospital food in the small quantities given, his stomach unfortunately became contracted. A part of the letter written for him reads as follows:

"He says that for 5 days he did drink of salt water to wash his inside and before he take his salt water he took a frog and cut it up or grind it with stones and some water and took it for his medicine and 5 days for salt water so that you can see that he is very sick now and for two days he did not eat any food, he ask you to be kind and sent to him something to make his inside good and to make him eat for he dont eat much since he was in the hospital, he says that he was eating little food like a whiteman and from that time his inside get small." I sent him medicine and told him it would now take less to fill his stomach, but warned him that if he continued to eat minced frog he would probably soon "croak." Later on they sent me word of some further treatment he had taken. A jellyfish was placed between his shoulders in order that his blood might be more forcibly sent to his extremities. Those who have seen a jellyfish alternately relaxing and contracting in the water, will at once see the rationale of such treatment. Brought in contact with the back of the patient it would augment the force of the heart's action. He also had used fresh nettles as a local application to the neck. You need hardly be reminded of their stimulating effect and yet his paralysis was not appreciably improved.

I have said little about our work among whites and Japanese, nor have I discussed the interesting subject of witchcraft and the power of the medicine-man—now a spent force. However, this article is already too long, and I shall have to crave your indulgence.

Yours sincerely,

R. W. LARGE.

To the Medical Profession:

A gentleman of means, has a member of his family afflicted with progressive muscular atrophy, the diagnosis having been with certainty established after consultation with some of the highest neurological authorities of New York City and various cities of Europe.

These physicians are unanimously of the opinion, that the case is incurable, inasmuch as up to the present, there has been published no form of treatment or medication which is known to have positively cured or arrested the inroads of this malady.

This gentleman wishes to spare no effort to bring relief. He believes that perhaps somewhere, some physician may have successfully hit upon some method of curing a case of progressive muscular atrophy, but who through his inability to corroborate his results, owing to rarity of cases or through modesty, or for fear of being discredited, has failed to publish his case. This gentleman's idea, is to try and bring this record to the surface by making an appeal to the profession through this Journal.

The case itself presents the characteristic picture and is typical of progressive muscular atrophy in every particular. The patient is fifty years old; married; in excellent general health. About one and one-half years ago, the disease made its appearance in the left hand, progressed, and within a few months, involved the right hand. Its progress since has been very slow. The family of this patient wishes to announce that any physician who supplies a complete history and detailed description of the method of treatment of any case of progressive muscular atrophy he may have successfully treated, the trial of which leads to the cure or arrest of the disease in their relative, will be rewarded by a liberal cash prize.

Requests for further particulars and replies should be addressed to

"Enquirer," care of this Journal.

[We have been requested to publish the above letter which also recently appeared in the *Journal A. M. A.*, March 12, 1910, p. 892. Ed.]

News Notes.

The St. Alexis Alumni Association met at the Hollenden Thursday, March 3, 1910. The program was as follows: 1. Observations Drawn from One Hundred Cases Treated by Vaccine Therapy, Demonstrations; C. L. McDonald. 2. Constipation in Children; R. L. Jett.

The Lakeside Hospital Medical Society held its forty-sixth regular meeting at the Hospital, Wednesday, March 23, 1910. The program was as follows: 1. Discussion of Endovascular Blood-Pressure, Arterial Hypertonus and Bursting Tension, C. F. Hoover. 2. Presentation of a Case of Dislocation of the Shoulder-Joint, J. R. Beiter. 3. Presentation of a Case of Gastro-Enterostomy, H. Rockwood. 4. Presentation of a Case of Amputation of the Foot in Diabetic Gangrene, V. Rowland. 5. Report and Exhibition of Specimens of Two Cases of Myoma Uteri, J. P. Smith. 6. Demonstration of Pathological Specimens, A. L. Ellis.

Morris Schott has returned from a trip abroad and is now located at 2369 East 55th St.

Medical School Inspectors for the Cleveland Public Schools: The following appointments have been made by Director Orr and confirmed by the School Board: Medical Supervisor of the Department of Medical Inspection, H. G. Sherman. Medical Inspectors, F. Aeberli, I. M. Belkowsky, L. W. Childs, M. Coplan, J. C. Darby, Helen Hempstead, J. H. McHenry and H. L. Sanford.

The Stark County Medical Society met at Canton, Tuesday, March 15, 1910. The programme was as follows: 1. The Roentgen or X-Ray as a Diagnostic Aid, J. E. Shorb, Canton. 2. A Study of some Physical Conditions Associated with the Insane, J. F. O'Brien, Massillon. 3. The Relationship of Certain Diseases of the Nose and Throat to General Medicine, Arthur J. Hill, Canton.

The Trustees of Grace Hospital, Conneaut, held their annual meeting February 26, 1910. The following officers were elected: President, W. H. Leet; Vice-President, F. W. Upson; Secretary, B. M. Tower; Treasurer, O. N. Warner.

H. C. Schoepfle, Sandusky, is seriously ill at Providence Hospital with inflammatory rheumatism.

The Richland County Medical Society held the regular monthly meeting at the Southern Hotel, March 16, 1910. The program was as follows: 1. The Gross Anatomy of the Trachea, Bronchi, Lungs and Pleurae and the Respiratory Mechanism, Chas. G. Brown. 2. Bronchitis, Acute and Chronic, W. T. Anderson, Shelby.

Y. L. Stevens, Mansfield, is ill with grippe.

The Erie County Medical Society met March 23, at 8 p. m., at the office of C. B. Bliss. J. T. Haynes presented a paper on Erysipelas. The hour of the meeting had been changed from 3 p. m. to 8 p. m. in the hope that the change would enable more of the members to attend; the afternoon meetings interfered with some of the members' office-hours. The annual dues have been raised to $2.50, the extra fifty cents being for the legislative fund. All County Societies are taxed alike.

The Good Samaritan Hospital, Sandusky, is now in operation, there being two patients in the female ward. The rooms are ready for the furniture and within a short time the hospital will be ready for general use.

Meetings of the Academy of Medicine of Toledo and Lucas County:

The Surgical Section met Friday, Feb. 25, 1910. The program was as follows: 1. Treatment of Dystocia from Pelvic Disproportion, G. B. Booth; discussion opened by W. G. Dice and H. E. Smead. 2. Indications for Cesarean Section, S. D. Foster; discussion opened by J. F. Fox and C. N. Smith.

The General Meeting of the Academy was held Friday, March 4, 1910. The program consisted of a paper upon Extracts from Medical History, by Louis Miller.

The Section on Pathology met Friday, March 11, 1910. The program was as follows: 1. Bilateral Dermoid Cysts of the Ovaries, F. M. Freeman. 2. Ludwig's Angina, C. F. Tenney. 3. Tuberculous Testicles, C. W. Moots.

The Section on Medicine met Friday, March 18, 1910. The program consisted of a Symposium on Measles and Scarlet Fever. 1. General Complications of Measles and Scarlet Fever, G. L. Chapman. 2. Disorders of the Nose and Throat in Measles and Scarlet Fever, A. L. Steinfeld. 3. Renal Complications in Measles and Scarlet Fever, R. S. Walker. 4. Eye Complications in Measles and Scarlet Fever, Chas. Lukens. Discussion opened by J. M. Frick and W. W. Brand.

F. W. Alter and A. E. Scheble, Toledo, have moved their offices to the Colton Building. This building has become quite popular with physicians since Mr. Spitzer has decided not to put up the Cortez, which was to have been occupied exclusively by medical men.

The Sandusky, Erie and Lorain County Commissioners are considering a joint tuberculosis hospital.

Toledo, during the month of February, had 472 houses in quarantine for measles, six cases proving fatal.

The Toledo Board of Health will provide for the pupils washstands, liquid soap receptacles, individual towels, and sanitary drinking-fountains. The fountains are designed to do away with the common drinking-cups, the pupil being able to slake his thirst by pressing a spring which throws a stream of uncontaminated water upward into his mouth. The installation of these fountains has recently been made possible by the opening of the new filtration plant.

H. A. Tobey, for many years in charge of the Toledo State Hospital for the Insane, left an estate of $13,880.

Frank B. Entrikin, age 39, of Findlay, died in the Jewish Hospital at Cincinnati, March 16, from the shock of an operation.

G. F. Heinen, Toledo, has moved his office to Sixth and Main Streets.

C. E. and H. J. Brinkman, on the charge of unlawfully practising medicine, were arrested in Toledo, March 21.

Those wishing to exhibit at the May meeting of the Ohio State Association may ascertain the rates, etc., by communicating with the Hotel Secor, Toledo.

The Elyria Memorial Hospital Staff held the regular monthly meeting at the hospital March 21. E. E. Sheffield read a paper on Myocarditis. H. M. Metcalf read a paper entitled "A Visit to the State Laboratory."

The Lorain County Medical Society held its regular monthly meeting at the Elyria City Hall March 8, 1910. Clyde E. Ford, Cleveland, read a paper on Fracture of the Skull. E. V. Hug also read a paper.

The Ashtabula County Medical Society held the fifty-first regular meeting at Ashtabula Tuesday, March 1. J. F. Elder, Jefferson, read a paper upon The Test Diet—Its Aid in Diagnosis and Treatment.

A reunion of the graduates of McGill Medical Faculty will be held in Montreal, Canada, June 6 and 7, 1910. On this occasion the annual convention will be held in the new buildings which are being erected for the medical faculty to replace those destroyed by fire three years ago. All graduates are invited to be present.

The International American Congress of Medicine and Hygiene of 1910 will be held May 25, in Buenos Aires, Argentine Republic.

In order to facilitate the contribution of papers and exhibits from the United States, there has been appointed a Committee of Propaganda, of which Charles H. Frazier, Philadelphia, is Chairman and Alfred R. Allen, Philadelphia, is Secretary.

The Congress has been divided into nine sections, each being represented in the United States by its chairman in this Committee of Propaganda. The sections, with the chairmen of each, are as follows: 1. Biological and Fundamental Matters, W. H. Howell, Baltimore, Md. 2. Medicine and its Clinics, George Dock, New Orleans, La. 3. Surgery and its Clinics, John M. T. Finney, Baltimore, Md. 4. Public Hygiene, Alexander C. Abbott, Philadelphia, Pa. 5. Pharmacy and Chemistry, David L. Edsall, Philadelphia, Pa. 6. Sanitary Technology, W. P. Mason, Troy, New York. 7. Veterinary Police, Samuel H. Gilliland, Marietta, Pa. 8. Dental Pathology, George V. I. Brown, Milwaukee, Wis. 9. Exhibition of Hygiene, Alexander C. Abbott, Philadelphia, Pa.

It will not be necessary for one contributing a paper or exhibit to the Congress to be present in person. Arrangements will be made to have contributions suitably presented in the absence of the author. The official languages of the Congress will be Spanish and English. Members of the following professions are eligible to present papers or exhibits: medicine, pharmacy, chemistry, dentistry, veterinary medicine, engineering and architecture. Papers may be sent direct to the Chairman of the particular section for which they are intended, or to Alfred R. Allen, Secretary, 111 South 21st Street, Philadelphia, Pa.

W. B. Saunders Company, the medical publishers of Philadelphia and London, have just issued a new edition—the thirteenth—of their handsome illustrated catalogue. It contains some 20 new books and new editions, and besides numerous black and white illustrations, there are two color cuts of special value. We strongly advise every physician to obtain a copy—sent for the asking. It will prove a ready guide to good medical books—books that we all need in our daily work.

The American Journal of Physiologic Therapeutics: Those of our readers who are interested in the various forms of physiologic therapeutics (including hydrotherapy, electrotherapy, massage, hyperemia, etc.), will be glad to know that it is proposed shortly to inaugurate this new journal devoted solely to the delineation of the progress made in these lines of therapeutic endeavor. The Journal will be published bimonthly and the subscription price will be $1.00 a year. The names and addresses of interested physicians should be sent in and those desirous of subscribing at once may enclose their remittance when writing. It is to be hoped that a wide-spread interest may be aroused in this matter. Write now, while this is fresh in your mind, to The American Journal of Physiologic Therapeutics, 72 Madison St., Chicago.

Deaths.

Anson Hurd, Columbus, Ohio, died February 18, aged 85.
Benjamin R. Parke, Wellsville, Ohio, died February 18, aged 67.
Richard F. Lamson, Bryan, Ohio, died February 10, aged 71.
Theophilus P. Taylor, Celina, Ohio, February 19, aged 51.
Edward C. Crum, Cincinnati, Ohio, died March 4, aged 62.
Jonas D. Johnson, Wharton, Ohio, died February 26, aged 64.
George W. Clemson, Thornville, Ohio, died March 7, aged 61.
Fred C. Abbott, Springfield, Ohio, died March 5, aged 29.
Frank B. Entrikin, Findlay, Ohio, died March 16, aged 39.
Nelson B. Van Winkle, Cincinnati, Ohio, died March 13, aged 57.
James M. Ayres, formerly of Hamilton, Ohio, died February 28, aged 70.

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The Practical Applications of the Wassermann Reaction.

By HOMER F. SWIFT, M. D., New York.

No discovery in recent time has aroused such widespread interest in the medical world as the serum diagnosis of syphilis. In the four years which have elapsed since the announcement of the discovery of the Wassermann reaction, the literature on the subject has assumed enormous proportions, and it is a source of gratification that the number of objections to the test is steadily diminishing. The only ground for regret is that the importance of the reaction is not more widely recognized, for its application is not limited to its use by the dermatologist, but is as far reaching as the various branches of medicine.

It is the object of this paper to present the results of about 18 months' experience with the test, and to attempt to point out its value and certain sources of error in its interpretation.

In table I are the tabulated results obtained by the examination of blood serums. Spinal fluids and specimens from autopsy are not included. Repeated reactions on the same patient at short intervals to show the effect of treatment are not included in this table, such reactions being recorded as one case, except in the primary stage where the reaction became positive, after a previous negative reaction.*

In this table only the results obtained with the Wassermann reaction are reported. The Noguchi modification was also applied in the majority of cases, and reference to some of these cases will be made later. An alcoholic extract of congenital luetic liver or of normal livers was used as antigen. Lately I

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*About two-thirds of these reactions were reported by the author in previous communications[1].

Read before the Academy of Medicine of Cleveland, March 18, 1910.

have employed an acetone-insoluble, ether extract of human liver, as recommended by Noguchi[2]. This extract is kept in alcoholic solution and a fresh saline emulsion prepared each day. It has proved in my experience to be the most satisfactory antigen of any form.

TABLE I.*—TOTAL EXAMINATIONS OF BLOOD SERUMS.

Diagnosis	Number cases	Number positive	Percent. positive	Number negative	Percent. negative
Lues I	21	17	81	4	19
Lues II	137	133	97	5	3
Lues III (cutaneous)	83	74	89	9	11
Nervous	48	36	75	12	25
Visceral	52	41	79	11	21
Latent (early)†	79	60	76	19	24
Latent (late)	94	43	46	51	54
Congenital	14	12	86	2	14
Tabes	54	34	62	20	38
Paresis	3	2	66	1	34
Non-luetic	272	3	1	269	99

†First three years.

*This work is is from the Carnegie Laboratory, Pathological Department, University and Bellevue Hospital Medical College, aided by a grant from the Committee on Scientific Research of the American Medical Association.

A detailed consideration of the test in the various stages of syphilis will be presented later. First I will discuss the specificity of the reaction, for to be of diagnostic value, any serum reaction should be specific for the disease under examination. That the Wassermann reaction is practically specific for syphilis is shown by the figures of nearly all workers. Among 34 different observers quoted by Bruck,[3] 5,038 cases were examined in which no history of lues could be obtained. Only 59 of these cases, or about 1.2%, gave a positive reaction, and among them a number were strongly suspected of syphilis.

In 272 sera from non-syphilitic patients which I have examined only three positive reactions were obtained. Two of these cases, one of leprosy and one of scarlet fever, were suffering from diseases well established as often giving the reaction, and the third was a child with varicella, but the patient presented strong clinical evidence of congenital syphilis. On the other hand, it is a well recognized fact that many patients with perfectly evident secondary and tertiary syphilis absolutely deny any previous symptoms. Among my records of 137 patients with secondary symptoms and a positive reaction, 12 denied any previous trouble; while in 83 tertiary cases with cutaneous manifestations and a positive reaction, 19 denied either primary or secondary lesions. As a result of such evidence it is easy to suppose that many of the reactions which are obtained in so-called non-syphilitic cases are really from patients with latent lues, who are ignorant of infection.

There are, however, certain diseases which have given positive reactions in a high percentage of trials. These are frambesia, leprosy and scarlet fever. The similarity in symptoms between frambesia and syphilis, as well as a spirochaeta being the etiologic agent in each, renders the reaction here of academic rather than practical interest, because frambesia is rarely if ever seen outside the tropics. The serum of animals with trypanosomiasis gives a complement fixation with luetic extracts. This lends support to the theory that *Spirochaeta pallida* is an animal parasite and that the reaction is a group reaction, specific for the lower forms of animal parasites. However, this view is controverted by the findings in leprosy. In this disease various observers report from 10% to 70% of positive reactions. The majority of these reactions are obtained in patients with the tubercular form of the disease.

The strongest point against the specificity of the reaction is the large number of positive results obtained in scarlet fever. Fua and Koch[4] analyze the figures of several observers. In all, 353 cases gave 12% positive reactions. These authors at the same time present 59 cases with no positive reactions. I have collected the figures presented by various authors in 562 cases (inclusive of the above-named authors), with only 5% of positive reactions. The positive reactions in scarlet fever do not seriously affect the value of the reaction in syphilis, for in scarlet fever it is transitory, and in positive cases repeated examinations over a period of two months will almost invariably give a final negative reaction, while repeated trials in syphilis will give nearly constant positive reactions. The clinical symptoms of the two diseases are so different that resort to the reaction for differential diagnosis is rarely necessary. Besides the above-mentioned diseases, an occasional case of tuberculosis, carcinoma and malaria have been reported as giving positive reactions. Most of these patients were in a profound cachectic state.

It is natural that there should be more variations in the primary stage of syphilis than in any other, for the length of time since infection has a decided influence on the results of examination. As it is difficult to obtain exact information as to the time of infection, I have reckoned the reactions in this stage from the time of the appearance of the initial lesion. The reaction by weeks is shown in table II.

TABLE II.—PRIMARY STAGE.

Weeks since appearance of chancre	Number cases	Number positive	Number negative
2	7	4	3†
3	5	4	1
4	4	4	..
5	1	1	..
6	1	1	..
7	3	3	..

†Two of the reactions became positive later in this stage.

It will be noted that the majority of the reactions were positive by the end of the fourth week of the second period of incubation, and no negative reactions were obtained after this time. As the average time of this period is six weeks, we were able to make a diagnosis at least two weeks before the appearance of the roseola. In many of these cases confirmatory reactions were made; this I regard as most important if we are placing the chief dependence on the test for diagnosis. The frequency of the reaction increases as we near the secondary stage, and in most of the reports in the literature it is found positive in about 80% of cases in the sixth week after infection. The earliest reaction in this stage is reported by Lesser.[5] The blood was examined and found positive eight days after exposure. Fourteen days later an initial lesion appeared, followed in six weeks by a typical roseola. According to the observations of Bruck[6] on apes, a positive reaction is an indication of a general invasion of the body by the syphilitic virus. After an infected ape gave a positive reaction its skin resisted reinfection.

In repeated examination of patients in the primary stage we sometimes see a negative reaction followed, in a few days, by a positive one. With such findings the diagnosis is nearly absolute. The Wassermann reaction is not usually found as early as *Spirochaeta pallida*. This is specially true in genital lesions, but in lesions about the mouth other non-pathogenic spirochaetae render a positive *Spirochaeta pallida* diagnosis more difficult. In such instances the serum reaction has more relative value. We also see initial lesions nearly healed, and some that are herpetic in nature where spirochaetae cannot be demonstrated; with such conditions the reaction has the greatest value. It has suggested that if *Spirochacta pallida* can be demonstrated in an initial lesion, and at the same time the serum is negative, the lesion be excised and energetic treatment instituted to prevent systemic infection. If the reaction then never become positive the prognosis is better than if secondary symptoms had been awaited.

In secondary syphilis with symptoms, the reaction is positive more often than in any other stage. According to the results of many different observers a positive reaction is found in from 90 to 100% of untreated cases. If the negative cases are reexamined with more sensitive extracts, a number of them are found positive. A few of the negative reactions are due to the fact that these particular sera are so strongly hemolytic for sheep cells that they mask the fixation of complement. If they are examined with the Noguchi modification, they are found to be positive. Among my cases this was the result in all of the negative reactions in this stage. If we use both the Wassermann and Noguchi methods in the examination of a serum, and find both negative, there is strong probability that the case is not secondary syphilis. As with all other biological reactions, a similar response to the virus does not take place in all individuals, so that a negative reaction does not absolutely eliminate syphilis, but repeated, properly controlled, negative reactions speak strongly against the presence of the disease. In a majority of the cases of secondary syphilis the eruption is so typical that resort to the reaction for diagnosis is unnecessary; but it is well to know the strength of the reaction during this stage, so that we may have some criterion with which to judge the effect of treatment in later years.

In a few instances the reaction has had the greatest confirmatory value in this stage. The following case, kindly furnished by Dr Fordyce, is illustrative.

Mr. X. presented himself with a typical luetic roseola through which were scattered a few papules. Careful examination of the penis and all the orifices failed to reveal any suggestion of an initial lesion or a scar. No herpetic eruption had been noted at any time. No lesions in mouth or pharynx. Only postcervical lymph nodes enlarged. Reaction positive. Treatment was instituted, and patient went to Europe where he was seen by two eminent syphilographers. When he presented himself to the second one no symptoms were present, but a serum test made at that time was positive and confirmed the diagnosis.

A few weeks later another patient presented himself with a similar rash, and without any evidence of initial lesion. When he was shown before a meeting of dermatologists, there was much discussion as to the nature of the eruption. Reaction positive. A few days later typical mucous patches appeared on the fauces, and under one week of inunctions the symptoms nearly entirely disappeared. A few cases in this stage with a positive reaction refused to admit the possibility of infection, but all of them developed marked symptoms, such as iritis or severe angina, so that treatment was necessary, and in all instances the improvement under mercury confirmed the diagnosis. In some patients in whom the roseola has been masked by other eruptions, such as scabies, the suspicion of syphilis has been confirmed by the reaction.

It has seemed wise to divide the tertiary manifestations into three groups—first, with skin or mucous membrane lesions; second, nervous lesions; third, other visceral manifestations. With most tertiary skin lesions we can make a fairly certain clinical diagnosis. With this class of cases alone we obtain a more accurate determination of the number of positive reactions in the late stages than if we add visceral manifestations, as to the nature of which we are not always certain. There were only nine negative reactions in 83 cases with evident tertiary skin lesions. Of these negative cases, three had received practically no treatment, five had been fairly well treated, and one well treated. The reasons for negative reactions in this stage are twofold: First, many of the cases have been under sufficient treatment to influence the reaction. Second, the virus is more localized, and spirochaetae are fewer in number than in the secondary stage. This diminution probably results in a weaker stimulus to the formation of antibodies. In this stage, however, the reaction is of more diagnostic value, for many of the visible demonstrations of late syphilis closely resemble those of some of the other infectious granulomata, and all diagnostic aids must be invoked before a positive opinion can be expressed.

While the reaction has been of great value in corroborating the generally accepted view of the relation of syphilis to tabes and general paralysis, its diagnostic value in other diseases of the nervous system is very marked. The predilection of syphilis for the nervous system is well known, and as Dr B. Sachs[7] has pointed out, any method which will differentiate between a central gliosis and a specific central myelitis, between a malignant brain tumor and a gumma, should be most welcome. Most of the sera from neurological cases were sent me by different neurologists, and their diagnoses are appended. A tabulation of the cases shows the wide application of the reaction in this branch of medicine.

TABLE III.—SYPHILIS OF NERVOUS SYSTEM.

Diagnosis	Number cases	Number positive	Number negative
Syphilitic meningitis	9	6	3
Syphilitic encephalitis	1	1	0
Cerebrospinal syphilis	11	6	5
Hemiplegia (syphilitic endarteritis)	12	10	2
Paraplegia	1	1	0
Sclerosis of cord	1	1	0
Disseminated sclerosis	1	1	0
Syphilitic myelitis	2	2	0
Ataxia	1	0	1
Optic atrophy	4	3	1
Sphyilitic uveitis	1	1	0
Central amaurosis	1	1	0
Syphilitic neuritis	3	3	0

Of the 36 cases with a positive reaction, 13 denied any previous luetic history. Among the negative cases eight admitted syphilis and two had been on long courses of antisyphilitic treatment with marked improvement. The two other cases with a negative reaction denied syphilis, but their symptoms pointed strongly to lues as the cause of their trouble. Such cases as this cannot be absolutely ruled out by the reaction.

In 12 hemiplegias, supposed to be due to luetic endarteritis, 10 positive reactions were obtained. All but one of these cases were under 50 years of age. One of the patients with a negative reaction was a man of 60, and the other was under treatment. In eight other hemiplegias, all with negative reactions, the causes were cardiac valvular disease with embolism, two cases; traumatic, one case; and arteriosclerosis, five cases.

Dr Sachs, who has had a most extensive experience with the reaction in relation to neurology, says that he regards a negative reaction of nearly as much value as a positive one, and is guided very largely in his treatment by the results of the reaction.

The clinical observations on the relation of syphilis to mesaortitis, aortic valvular disease and aneurism have been more than supported by the results of the reaction. Collins and Sachs[8] showed that all of five cases of aortic aneurism gave a positive reaction, as did nine out of 13 cases of pure aortic valvular disease; only two in five combined aortic and mitral lesions, and two in 11 of pure mitral diseases gave a fixation. Citron[9] found 10 positive reactions in 16 cases of pure aortic insufficiency, and Donath[10] 23 in 27 cases. In 12 cases of aortic insufficiency I have obtained six positive reactions. The patients with negative reactions all admitted syphilis and had been under treatment. In three cases of aortic aneurism I have obtained only one positive reaction. This patient denied syphilis, while the two negative reactions were from patients who admitted lues and had been treated.

In syphilis of the liver, testicle, bones, and joints, in which a differentiation is necessary between neoplasm, tuberculosis and syphilis, the reaction is of much interest to the surgeon. In seven cases of suspected syphilis of the liver I have obtained five positive reactions. In two of these patients the ascitic fluid also gave the reaction, while the fluid from a case of atrophic cirrhosis gave no fixation.

Four cases of gumma of the testicle gave three positive reactions; the one negative case admitted syphilis. In one instance one testicle had been removed because of a diagnosis of tuberculosis. Subsequently the other testicle was involved. A positive reaction led to the institution of antiluetic treatment with marked improvement.

In syphilis of the bones, such as periostitis, gumma and osteomyelitis, the test has been positive more often than in any other class of cases. Seventeen patients were examined, with only one negative result. This case had been under treatment for six months with but little effect, and as both the therapeutic and serologic tests were negative, lues could be fairly well eliminated. Of the 16 positive reactions only three admitted a luetic history. Four of the positive reactions were supported by the x-ray pictures of the bones. In all the others, as far as I have been able to determine, there was rapid improvement under potassium iodid. Two of the cases are exceedingly instructive:

A woman had a miscarriage five years previously. Shortly afterwards an osteomyelitis of the jaw developed, for which an operation was performed to remove a sequestrum. Subsequently a number of foci developed in different bones, resulting in chronic suppurating sinuses. The diagnosis was tuberculosis and the patient underwent several operations. The reaction was found positive, and under potassium iodid all of the sinuses rapidly closed.

Another case is that of a man who had a chronic sinus from one of the ribs for the past two years; also some signs of softening in the apices of the lungs. A pathologist reported tuberculous tissue and tubercle bacilli as a result of an examination of tissue from the sinus. A positive reaction pointed to syphilis, and nearly immediate healing of the sinus and improvement in the pulmonary signs under mixed treatment confirmed the later diagnosis.

Two cases of monarticular and one of chronic polyarticular arthritis gave a positive reaction, with cure following the exhibition of iodids and mercury.

When one considers such cases as above cited, he must recognize the value of the reaction. In former times, when we had to differentiate between gumma and neoplasm, the therapeutic test was applied. If improvement resulted, the inference was syphilis; but it is a well known fact that certain neoplasms improve for a time under the iodids. With the serum test we have a much more certain diagnosis, and often the patient may be saved much valuable time if the reaction is negative; while if it is positive, operative interference with excision of a gumma will often be prevented.

The relation of leukoplakia to the activity of the syphilitic virus is being more clearly defined by the serum reaction. As leukoplakia is one of the most common predisposing causes of cancer of the tongue, any information we may obtain as to its exact nature will be most useful. In seven cases of leukoplakia examined I obtained six positive reactions. The one negative reaction was from a case in which syphilis could be nearly absolutely eliminated; and the patient was such an inveterate smoker that tobacco could be invoked as the cause. Five of the six positive reactions were from cases that admitted syphilis many years previously; the other reaction was from a patient who admitted the possibility, but who had never noted any other symptoms of the disease. In Neisser's clinic Pürckhauer[11] obtained 10 positive reactions in 12 patients examined, and in all of these 10 there was decided improvement under mercurial treatment. In view of this evidence, it seems wise to consider leukoplakias following syphilis, not as remains of the disease nor of parasyphilitic nature, but as active manifestations, and to treat them as such. If this is done, we will, no doubt, prevent many cancers of the tongue.

While we are discussing the diagnostic application of the reaction in visceral syphilis, it is useful to emphasize the fact that not all symptoms in a patient with a positive reaction are necessarily due to syphilis. It is well to remember that he may be suffering from some other disease as well. One instructive example was that of a man with tumors in the abdomen, a spontaneous fracture of the humerus and a focal brain lesion. Reaction was positive; but at autopsy it was found that the symptoms were caused by a sarcoma of the kidney, with metastases in the bones and brain. The history showed that 12 years previously there had been an initial lesion, followed by secondaries and a course of inunctions. We must remember that the reaction indicates only that syphilis is present somewhere in the body; the examination of the changes in any organ must be as carefully made as if the test had not been applied.

In no stage of syphilis is a new criterion of the status of the patient so welcome as the *so-called* latent stage. The qualifying phrase "so-called" is emphasized because in the past four years our ideas as to latency have undergone many changes, and a number of authors have substituted the term "syphilis without manifestations," for latency. The percentage of positive reactions varies with the time since infection, number of relapses, amount and efficiency and time since treatment. Where the year since infection could be determined I have classified my cases, without regard to treatment, as follows:

Year.	No. of cases	Percent. positive
1	36	72
2- 3	33	61
4-10	40	45
11-20	37	35
21-30	9	66

Most of the cases over 20 years since infection, had been poorly treated and suffered a number of relapses, which no doubt explains the high percentage in this period. Lesser,[12] in a larger series, gives the frequency of positive reaction in the first two years as 70%; from the third to the thirtieth year, 50%; from the thirtieth to the thirty-fifth year as 11%; and only an exceptional reaction after this period. He also calls attention to the striking agreement between his results with the serum reaction and his findings in the autopsy room. In four years' autopsy experience in Berlin, there was evidence of visceral syphilis in 49% of subjects in whom a previous history of syphilis was obtained. With the serum reaction 46% of all latent cases were positive. These figures so nearly correspond, that they suggest that latency may mean only that the disease is not evident on the surface, is not giving clinical symptoms, but is still active in some of the more vital organs. Many authors are of the opinion that this is the case. Citron[13] gives the following reasons for such a contention: "First, the constant finding of the reaction in manifest lues. Second, untreated or poorly treated individuals show the reaction after many years. Other bacterial antibodies begin to diminish in a few weeks to a few months after the disease has ceased being active. If the lues reaction is present after 10 years, it must be due to a constant production of the antibody, brought about by the presence of *Spirochaeta pallida* in the system. Third, cases which have no other symptoms but a positive Wassermann reaction lose the reaction under mercurial treatment. Thus, by means of the specific therapy, toxic substances are removed, the formation of the antibody stops and the reaction becomes gradually weaker." Where the line between latent and visceral syphilis shall be drawn in the light of modern knowledge is a difficult question to decide. I am of the opinion that we should regard a positive reaction as an evidence of active syphilis, at least from the standpoint of treatment.

In connection with latent syphilis there are certain general applications of the reaction which we may here consider.

The use of the test in applicants for life insurance must be worked out in time. The vital statistics of all life insurance companies show that patients with lues are a greater risk than those who have not contracted the disease. Brockbank,[14] in an extensive discussion of the relation of syphilis to life insurance, lately says, "No syphilitic proposer who cannot bring forward satisfactory evidence of having undergone proper treatment should be accepted." I believe that eventually the evidence required will be repeated negative reactions over a period of time sufficient to show that the patient is actually free from the disease. Brockbank further states: "No proposer showing signs of the disease in any one of its stages should be accepted." My opinion is that a positive reaction will be considered sufficient evidence for rejection of a candidate, or acceptance of him at an advanced premium. Life insurance companies have been slow in taking up this most important criterion as to the condition of the patient, but when they do, much valuable evidence will be collected.

Another question which is already much discussed is the application of the test to those who have had lues and come asking advice in reference to marriage. Shall we follow the old rules on this subject, or does the test change all these? This is hard to decide, for we see patients with a positive reaction who have healthy children, and a very few with a negative reaction who have children with congenital syphilis. However, if the candidate gives repeated negative reactions, we can feel more certain that he will not transmit the disease than if we depend alone on clinical evidence. Also, if he should give a positive reaction, it would be wise to institute treatment and postpone the marriage until the test becomes negative and persists in this condition. As a general rule it is probably safer to allow a man with a positive reaction to marry than to permit a woman presenting the same symptom to do so. I do not believe that in spite of a negative reaction we should allow the patient to marry in the first four years after infection. After many years' experience we may formulate some more definite rules in regard to marriage, but at present it is best to err on the side of caution.

The reaction has thrown much light on the nature of the so-called parasyphilitic diseases. Lesser's[15] figures show that 100% of patients with general paralysis give a positive result. Marie and Lévaditi,[16] in studying the spinal fluids in this condition, found that in the incipiency of the disease there were a much smaller number of positive reactions than later, when the paralytic symptoms had progressed and the patients were in the stage of dissolution. In these studies the percentage of positive findings was in direct proportion to the activity of the morbid process.

While I have obtained only 62% of positive reactions in tabes, a closer analysis of the records shows better the frequency of syphilis in tabetics. In 54 patients examined there were 34 positive reactions, but one-half of this number, or 17 patients, denied syphilis. In the 20 negative reactions 16 admitted syphilis; four of these were untreated, two had little treatment, six were fairly well treated, and three were well treated. The four cases who gave a negative reaction and denied syphilis were all untreated. In two of these the diagnosis of tabes was very doubtful, while in the other two it was well established. If we eliminate the two doubtful cases from the statistics, we have 50 out of 52 cases, or a total of 96% in which syphilis could be shown to have been present. In looking over my records it seems that the old, well established cases give a higher percentage of negative reactions than do those in the earlier stages, and it has been suggested that antiluetic treatment will be more efficacious in a tabetic who gives a positive reaction than in one who does not.

In obstetrical practise and in the study of congenital syphilis much valuable information has been added to the previous didactic knowledge. I have examined 14 cases of congenital lues; 12 of these gave a positive reaction. The two negative reactions were obtained in patients who had undergone years of mercurial treatment. In 10 women who had borne children with congenital syphilis or had had syphilitic miscarriages, nine gave a positive reaction. None of these women recalled any evidence of syphilis before labor. Later five of them presented tertiary manifestations, four remained free from all clinical evidences of the disease, but only one of these four gave a negative reaction.

Baisch,[17] in an extensive study of 140 women who had miscarriages or luetic children, has elucidated some points in the transmission of syphilis. Of these, 24 mothers gave a negative reaction and the dead fetuses showed no spirochaetae; while 102 mothers gave a positive reaction and gave birth to fetuses or children with congenital lues in whom *Spirochactac pallidac* were demonstrated. Of these 102 women, 27 had evidence of syphilis, while 75 were free from such evidence. With these women the positive reaction may have been due either to a latent syphilis,—the woman being a spirochaeta carrier,—or the complement-fixing body may have been formed in the fetus and filtered through the placenta into the maternal circulation. Baisch found *Spirochaeta pallida* not only in the placenta, but in the maternal portion of the decidua, so he concludes that the mothers were actually infected. He showed that the intensity of the reaction in the mother did not diminish after the delivery of the child, as would be expected were the antibody formed in the child and filtered through the placenta. At times the blood of the mother and child gave different reactions; this would not be the case were the immune body filtered through the placenta.

In 12 mothers with a negative reaction the fetus and placenta showed spirochaetae, a finding which proves that they may be present without exciting the formation of the complement-fixing body; but the evidence of spirochaetae in the placenta of all the positively reacting cases leads Baisch to the conclusion that this fixing substance is always dependent upon the presence of spirochaetae somewhere in the body.

With all this evidence we see that the period of immunity defined by Colles' law is really a period of latent syphilis, as shown by the reaction. A positive reaction in a high percentage of sound children from clinically syphilitic mothers, similarly, shows that their immunity defined by Profeta's law is only latency. It is well known that many of these so-called immune mothers and children later present evidence of syphilis. We now make it a rule to treat any such apparently sound mothers or children who give a positive reaction as though they presented active evidence of the disease. I believe that in this way we will ward off many distressing symptoms.

A systematic examination of wet nurses by Bergmann[18] showed that nearly 10% gave a positive reaction. All wet nurses should be examined in this way before they are accepted, and every nurse showing a positive reaction should be rejected.

Among the earlier observations the effect of treatment on the frequency of the reaction was noted. For example, Citron[19] found 65% positive reactions in treated cases, and 81% positive in untreated. Bruck[20] obtained only 29% positive reactions in treated patients, but 82% positive in those untreated. The table given by Jesionek and Meirowsky[21] shows well that the percentage of negative reaction in latent lues increases with the amount of treatment which the patients have received:

Number of courses	0	1	2	3	4 and 5	6 and 7	8 and more
Number of cases	76	85	76	55	76	38	16
Percent. positive	97.3	64.7	50	47.3	42.1	34.2	31.2

My records show 74% positive reactions in latent cases which have had six months' treatment or less, and the rate falls to 37% for those which have been treated three years. But the most interesting point in such statistics is that we can no longer regard simply three years' treatment as sufficient, but now have a new guide to the efficiency of our therapeutics.

Lately many reports have appeared showing the influence of treatment on the reaction in cases which have had repeated tests.

Blaschko[22] found a diminution or disappearance of the reaction in 76 out of 90 cases which were repeatedly examined. The percentage of change in latent syphilis was nearly as great as in the active stage of the disease. The results of Boas[23] show well the relation of treatment to the reaction, and its importance as a guide to prognosis and treatment. A positive reaction before treatment was shown by 82 patients in the secondary stage. Of these reactions 76 became negative after a course of inunctions. Of the six persisting positively reacting cases, five remained under observation, and all suffered a relapse within a month, while only three of the 76 negatively reacting cases relapsed in the same period. With patients later in the disease he showed that relapses were usually preceded by a return of the positive reaction, while patients with persistent negative reactions, or those who were treated upon the return of the reaction, all remained free from relapses.

Citron's[24] laws are an epitome of the relation of treatment to the reaction. They are:

1. The longer the syphilitic virus has worked in the body and the oftener it has caused relapses, the more constant and stronger is the antibody content of the serum.

2. The earlier the mercurial treatment is begun, the longer it is continued, the more often it is repeated, and the more efficient the manner of application, the lower is the antibody content.

From the records of the cases which I have been able to follow it is seen that the reaction disappears under treatment much more readily in the early stages of the disease than later, but that a reaction which becomes negative in the late stages is more liable to remain negative than one which becomes negative in the first year. Injections and inunctions influence the reaction much more quickly than does the administration of mercury by mouth. Lesser[25] reports reactions which have disappeared under the iodids, and Reinhart[26] has noted a marked influence of arsacetin on the reaction in the primary stage of the disease. Among all observers, however, the opinion prevails that no drug so constantly or uniformly affects the intensity of the reaction as does mercury.

We may therefore regard the reaction as a guide to treatment in the following conditions:

1. In the primary stage, if the diagnosis is clinically doubtful and *Spirochaeta pallida* cannot be demonstrated, as soon as a positive reaction appears, treatment should be instituted. The reaction, with the presence of *Spirochaeta pallida* renders a diagnosis positive, and by starting treatment before the appearance of secondaries a dangerous saturation with the virus will frequently be avoided, and the danger of the patient becoming an active distributor of the spirochaetae minimized.

2. In the first three years of the disease treatment can be more rationally controlled than by merely following the rule of a certain amount of treatment, with periods of rest. By means of frequent observations in many cases the disease can be controlled with a small amount of mercury, while others will require a constant application of the drug.

3. In the late latent period a positive reaction is an indication for further treatment, and, as a rule, treatment should be continued until the reaction becomes negative. This rule should, of course, be modified according to the condition of the patient. If he tolerates mercury badly, or presents other contraindications to treatment, the indications for the individual must be recognized and met. Perhaps some reactions will never yield, but it is in these cases that the prognosis is probably bad, and such patients that we may expect to go on to tabes or general paralysis.

A persistent negative reaction is a good prognostic sign; a returning reaction is a warning that a relapse may be imminent, and is sufficient indication for renewed treatment. In former times the treatment of syphilis was more or less guesswork, guided alone by clinical symptoms. The Wassermann reaction is one of the most valuable guides both to diagnosis and treatment of syphilis that has ever been given to the medical world.

I do not believe that the laboratory will replace the clinician in the diagnosis of the disease, but it has furnished him with a new symptom, one that is found earlier in the primary stage, more constantly in the secondary stage, and more persistently in the later stages than any other one symptom. If those to whom the application of the reaction is new will regard it in this light, and those who have had more experience with it will not forget that it is only a symptom and must be regarded as any other symptom, the serum diagnosis test will occupy a place in the equipment of the practitioner from which it will not be dislodged by the attacks of the pessimist nor the overexpectant enthusiasm of its friends.

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The Vascular Pathology of Congenital Syphilis.

By OSCAR T. SCHULTZ, M. D., Cleveland.

In the German pathological literature there has arisen a certain amount of controversy over the occurrence of pathological changes in the aorta and the larger arteries in congenital syphilis. On the one hand are described alterations which are considered not only inflammatory in nature but specific for lues; on the other, the specificity, even the inflammatory nature, of such changes are denied. Since we now have, in the demonstration of *Treponema pallidum*, a diagnostic criterion, it is the purpose of this paper to review the points at issue, to attempt to add a few facts which may help to establish a proper conclusion and to give a survey of the pathological changes which the vascular system, in general, may show in congenital syphilis.

Such discussion as has arisen has followed the publication of a paper by Wiesner (1905), who noted the presence of certain changes in the zone between the media and adventitia in the aorta and its larger branches and in the pulmonary artery. In stillborn fetuses and in infants dying shortly after birth, the diagnosis of syphilis resting upon the gross and microscopic examination, there occurred areas of cellular infiltration about the congested vasa vasorum. The infiltration was made up of lymphocytes, large and small mono- and poly-nuclear leukocytes (whatever that terminology may mean) and proliferating fixed cells. In children which lived for a longer time ("wenige Wochen") such areas of cellular infiltration were not seen, but instead there was evidence of a multiplication of the connective tissue and of obliteration of the vasa vasorum, changes which Wiesner considered the later stage of those just mentioned. Wiesner concluded that the condition is the same as that termed mesaortitis in acquired syphilis and that it is specific of lues.

Wiesner's findings were confirmed by Bruhns (1906) and by Rach and Wiesner (1907).

These observations, which sought to establish the occurrence of a specific type of involvement of the larger arteries in congenital syphilis, led Scharpff (1909) to take an exactly opposite position. According to the latter, the areas supposed by Wiesner, Bruhns, and Rach and Wiesner to be pathological lesions are only normal islands of embryonic tissue upon which the further development of the larger vessels is dependent—they are physiological, not pathological.

Wiesner (1910) returns to the attack, maintains his original position, states that the specific changes noted have been present in 15 (59%) of 27 cases of congenital syphilis examined by him, and the controversy has reached the "Erwiederung" stage.

One would think that there is little room for argument. Certainly it ought to be fairly easy to distinguish between an area of pathological infiltration and one of normal developmental tissue. The question of the involvement of the larger vessels, and especially that of the nature and mode of production of such changes as there may be, are of considerable importance and have rather direct bearing upon the nature of the vascular changes in acquired syphilis.

That the smaller vessels in the lesions—primary, secondary and tertiary—of the acquired disease show evidence of pathological change is now established beyond peradventure. The involvement is essentially a subacute inflammatory process beginning in the outer portion of the walls of the smaller vessels—arterioles, venules and lymphatics, spreading to the surrounding tissue and finally leading to obliteration of the vessels. In the local lesions there occurs, then, a vascular inflammation produced by the direct action of the infectious agent.

But as to the changes in the medium sized arteries a definite statement cannot be made. That a chronic proliferative arteritis, an arteriosclerosis in the ordinary sense, is frequent in acquired syphilis is well enough known. Is this change an actual part of the syphilitic inflammation? There is little evidence to support such a view. The diffuse thickening of the arterial system in general is not the result of infection of the walls of all the vessels by *Treponema pallidum,* it is not a specific inflammation. It is a secondary, non-specific process, one which bears the same rather indefinite relation to syphilis that the same type of arteriosclerosis bears to alcohol and certain other factors. In the case of syphilis, toxemia may play a part; very probably, also, the obliteration of the many terminal vessels of the multiple lesions of the secondary stage is an important factor. Besides the non-specific, diffuse arteriosclerosis, the arteries of medium size may show localized inflammatory areas which are, according to Abramow (1899), gummatous and hence specific.

In addition to the specific inflammatory involvement of the smaller and medium sized vessels and the chronic diffuse thickening of the general arterial system, the aorta and the very large arteries may show localized areas of inflammation. Much has been written, both *pro* and *con,* as to the anatomically specific character of these aortic lesions. Many of the papers are purely statistical; only some of the more important, which deal with the histology of the process, need be considered. The great amount of work which has been done has been due largely to a communication by Döhle (1895), according to whom syphilis produces a round cell infiltration about the nutritive vessels of the adventitia and media, following which there occurs scar formation and secondary thickening of the intima. He considered the change analogous to gumma formation and thought it characteristic of syphilis. Backhaus (1897), working under Heller, believed the primary change to be an obliteration of the vasa vasorum; necrosis and infiltration by wandering cells follow; he also considered the condition one of gumma formation. Then Heller (1899), discussing the relation of syphilis to aneurism, described changes which begin as a round cell infiltration about the vasa vasorum. The media becomes infiltrated with similar cells and occasionally giant cells may be present. Heller held these cellular aggregations to be gummata; he therefore thought that the condition was specific for syphilis and termed it a *mesaortitis luetica;* it is frequently referred to in the literature as Heller's aortitis. Abramow (1902) reported a case in which the aorta showed lesions that he considered characteristic of syphilis because of their gummatous nature. Heine (1902), in three cases, found what he held to be a true gummatous aortitis.

There began to be some doubt, however, as to whether the lesions described by Döhle, Backhaus, Heller, Abramow, Heine and others were really gummata—the specific nature of the change began to be called in doubt because the histological characteristics of the gumma were not clear cut enough. Chiari (1903), investigating aortic involvement with particular reference to syphilis, described a type of arteriosclerosis which he called *mesaortitis productiva,* and which differs from the ordinary atheromatous aortic sclerosis in that the former is in the beginning an inflammatory process subacute in nature and not so apt to undergo regressive changes, and from the lesion described by Heller and others in that the latter is not so diffuse. Chiari concluded that this type of aortitis may be and often is due to syphilis; that one will not be able to decide as to the specific nature of the lesion until the cause of the disease shall have been discovered; and that, given a mesaortitis of the diffuse subacute type, one must think of the possibility of lues, bearing in mind, however, that a similar pathological picture might be produced by some other etiological factor. Marchand (1903) was even less assured of the specific nature of the process than was Chiari. Benda (1903) considered a true gummatous aortitis the most frequent cause of the aortic sclerosis associated with deformity due to scar formation. Abramow (1904), in reviewing the entire subject, concludes, after a detailed study of six cases, that the subacute aortitis, the *mesaortitis productiva* of Chiari, shows no changes characteristic of syphilis; that a similar lesion may be produced by diseases other than lues; and that only a true gummatous aortitis, the *mesaortitis luetica* of Heller, may be considered specific.

I have run over the histological changes which occur in the vessels in acquired syphilis in some detail, particularly in the case of the infiltrative types of lesions, because it is especially with Chiari's *mesaortitis productiva* that Wiesner (1905) compares the changes noted by him in congenital syphilis. While he does not attempt to reach a conclusion as to the specific nature of the process in acquired lues, he does maintain that he has seen the changes described by himself only in congenital syphilis and he commits himself by suggesting for the lesion the term *"mesarteriitis syphilitica congenita."*

It is apparent that the investigators mentioned find it difficult to decide that the aorta, in acquired syphilis, shows changes which may be considered characteristic of the disease from the histological standpoint. This uncertainty is even more evident in the discussion of Heller's paper (1899) by Baumgarten, Chiari, Orth, Ponfik and Ziegler, and in that by Baumgarten, Hansemann and Rindfleisch following the papers of Chiari (1903), Marchand (1903) and Benda (1903). In the first place, it takes more than a mere association of the disease and arteriosclerosis to establish that the latter is a specific part of the disease. Secondly, in the case of the more cellular lesions, even such experienced pathologists as those mentioned find it difficult to decide as to their gummatous nature. As Chiari (1903) pointed out, we must know the cause of the disease and must be able to establish a direct relationship between the organism and the lesion before we can conclude that the lesion is produced by the disease. Today we feel that the cause of syphilis is known, but there is little in the literature dealing with the relation of *Treponema pallidum* to changes in the larger vessels. Schaudinn (1907) reported the presence of treponemata in a case of sudden death caused by occlusion of the aorta. The occlusion was due, according to Schaudinn, to the presence of an aortitis of the type described by Heller (1899). He gives no histological description of the lesion, contenting himself with the statement that the lesion was of the kind that would be termed late syphilitic by the pathologist. Many organisms were present, singly and in clumps, and he explained their large number by supposing that there had been present an older lesion in which only very few treponemata were present and that a rapid multiplication of the parasites became associated with a lesion which showed evidence of more recent inflammation. Wright and Richardson (1909) have noted the occurrence of *Treponema pallidum* in relatively small numbers in five cases of aortic sclerosis. They say that the "microscopic examination shows lesions described as characteristic of syphilis." Only one case showed the cellular type of lesion. As is apparent from the literature there is considerable uncertainty, even in the more recent cellular lesions, as to what may be considered histologically characteristic. Such lesions as were present in their four other cases, although they show no histological change characteristic of lues, were probably due in the beginning to the organism. Why the latter may be present occasionally, and why a lesion which was initiated by the parasite may later show neither treponema nor the specific change produced by it will, I believe, become apparent from a study of the earliest changes which the vessels may show. Schmorl (1907), discussing the occurrence of *Treponema pallidum* in the lesions of syphilis, stated that among tertiary lesions he had seen the organism in one case of syphilitic aortitis. But no histological description is given, so that his case is of little help in trying to determine whether there is a specific type of vessel inflammation in lues.

I have seen no report of the examination for *Treponema pallidum* in a mesaortitis of Chiari's type, unless the one case of Wright and Richardson be considered such. In a case of fatal pulmonary thrombosis which I have had occasion to study, the pulmonary artery shows a generalized arteriosclerosis of the ordinary nodular or atheromatous type. In addition there is present a lesion showing evidence of more recent change. In the media there is a moderate, rather diffuse infiltration by lymphocytes; similar cells are present in small numbers about the vasa vasorum and there is some degeneration of the original tissues of the media. Histologically the lesion is a typical *mesaortitis productiva* in Chiari's sense, but I have been unable to find any treponemata in it. Apparently one must still agree with Chiari (1903) and with Abramow (1904) that diseases other than syphilis may produce this type of lesion in the larger vessels. In so far as the involvement of the larger arteries in acquired syphilis is concerned one must conclude that both the ordinary, degenerative, chronic form of arteriosclerosis and the rarer, subacute, productive type may be produced by *Treponema pallidum,* that neither is in every case due to this organism, and that neither shows changes which will permit an absolutely certain histological diagnosis of syphilis; and, further, that the gummatous aortic lesion (Heller's aortitis) is due only to the localization of the parasite. Whether one believes that the latter lesion is histologically characteristic of syphilis depends upon one's ideas of the specific nature of the gumma in general. Personally, I am not a very strong believer in the histological specificity of the developed gumma. It shows only a necrotic center surrounded by a chronic inflammatory periphery, which latter contains no unusual elements and shows no characteristic arrangement of the cellular elements that are present. While I do not feel that there is anything so very characteristic in the pathological histology of the gumma, I do not believe that its mode of formation, its pathogenesis, is specific.

Rach and Wiesner (1907) paid particular attention to the localization of *Treponema pallidum* in the cases of congenital lues which showed the rather diffuse, productive type of arteritis noted by them. Although treponemata were present in numbers in the organs of all their cases, few were seen in the vessel walls and they did not bear any direct relation to the lesions. These observers concluded that the lesions were due to some toxic influence acting through the vasa vasorum. Nevertheless, they considered the lesions specific—a belief which is no more warranted than the one which holds a generalized diffuse arteriosclerosis to be part of the specific luetic process simply because the condition is associated so frequently with the disease.

In another paper (Schultz, 1909) I have detailed the evidence which has led me to conclude that congenital syphilis as one usually sees it—that is, infants showing evidences of lues born dead during the latter half of pregnancy or alive at or near full term—is an infection by way of the placental circulation. Since the infection is a hematogenous one congenital material is very much more favorable than that from the acquired form of the disease for the study of the early changes in the vessels. And it is only by the study of the earliest stages that one can hope to gain an insight into the way in which are produced the later stages, especially such as may occur in the vessels of those in whom the disease is the acquisition of their own efforts rather than an inherited unearned increment.

The most constant vascular involvement in hereditary lues is that of the smallest vessels—the arterioles, the capillaries and the lymphatics. And the widespread distribution of this change throughout the internal organs is, together with the localization of the treponemata, striking proof of the hematogenous nature of the infection. Carried by the blood stream the organisms finally reach the ultimate ramifications of the arterial system and penetrate the walls of the arterioles and capillaries. The result of this localization is a reaction upon the part of the vessel, manifested by endothelial hypertrophy and hyperplasia, and upon the part of the immediately surrounding tissue, evidenced here by slight lymphoid infiltration and connective tissue proliferation. It is important to bear this very early involvement of the smallest vessels in mind; I hope to show that it is the essential feature in the changes which occur in the larger vessels. Following the primary change in and about the small vessels there occur, of course, other tissue alterations. The most common of these is the diffuse proliferation of the stroma of the internal organs associated with some infiltration by lymphocytes. The diffuse tissue reaction goes hand in hand with the migration of the parasites away from the vessels and is the expression of a widespread localization. In the diffuse fibrosis the parenchyma cells degenerate and disappear early because, as has been shown by a number of investigators, *Treponema pallidum* eagerly invades such cells. The proliferative reaction upon the part of the stroma seems to be, to a certain degree at least, a compensatory one whose purpose is the replacement of lost parenchyma cells; in part it appears to be due to the stimulation of the fixed tissues by an organism whose action is only of moderate intensity.

With or without a diffuse increase in the connective tissue there may occur more intense changes immediately about the small vessels which are the first to show the very early changes noted above. At one side of an arteriole or a capillary, often entirely surrounding the latter, may be seen, at times, rather well-defined, minute areas composed of fibroblasts and lymphocytes, areas from which the cells originally present have disappeared. These are miliary cellular gummata. Their immediate relation to blood vessels leads to early necrosis. The pathogenesis of the gumma, the formation of the lesion as a direct part of the involvement of minute vessels, is the only attribute of the gumma that I am willing to consider at all specific. It will be shown later that the localized areas of cellular infiltration in the walls of larger vessels, resulting in the gummatous arteritis of Heller, are produced in the same way.

The earliest involvement of the large vessels that I have ever seen in congenital syphilis was present in a full-term child born of a mother who, there is every reason to believe, was infected only a short time (a few weeks) before the birth of the infant. The latter died on the fourth day and microscopic examination shows at first glance no evidence of lues. Treponemata are present in all the tissues in large numbers. Careful study shows the presence of certain changes in the walls of the main branches of the pulmonary artery and of the portal vein. These alterations, in their relation to certain structures of the vessel wall and to the treponemata present, are of such a nature as to afford the clue necessary for the explanation of the more advanced lesions which the larger vessels may show in acquired as well as in congenital syphilis. In the pulmonary artery of the case under consideration the lymphatics of the adventitia show a definite endothelial hypertrophy and hyperplasia. In the adventitial and medial tissue immediately about these lypmphatics and about the blood capillaries a few lymphocytes are present. The reaction is very slight because very early. In silver nitrate preparations treponemata are most numerous in the vessel wall in and immediately about the lymphatics which are involved and about the capillaries. In the intima and just beyond the adventitia organisms are present in much smaller numbers. The lymphatics and capillaries involved bear the same relation to the wall of the pulmonary artery that the vessels of the same class do to the tissues of the internal organs. They are terminal vessels, to which the parasite has been brought by the circulation and in and about which active multiplication of the organisms is occurring. The earliest involvement of the largest vessels is essentially the same, therefore, as that of the smallest vessels of the internal organs described above. The localization of *Treponema pallidum* in the "Grenzzone" between media and adventitia is a very characteristic one and in many cases of congenital lues is so marked that in silver nitrate preparations the larger vessels are sharply outlined, even under low magnifications, by a black zone. The same thing occurs in those other structures where the structural relationship of lymphatics and capillaries is the same as in the large blood vessels, namely in the bronchi and the bile-ducts.

Later stages of the change just described may manifest themselves in one of two ways. The vessel wall may become so diffusely infiltrated with lymphocytes and the connective tissue may proliferate to such a degree that the original structural elements of the vessel wall can no longer be recognized. Then the primary participation of the lymphatics and capillaries becomes hidden, just as is the case in the diffuse syphilitic inflammation of the internal organs. The result may be a most intense and diffuse subacute inflammation of the vessel wall, a condition which was particularly evident because of its extreme grade in the portal vein of one case. This is the change which, in the aorta, leads to the productive mesaortitis of Chiari. It is the result of a severe infection of the vessel wall by way of the vasa vasorum and the lymphatics. It is the same lesion which occurs in the umbilical vein, the so-called *endophlebitis syphilitica* described by Birch-Hirschfeld and others (improperly named because it is not primarily an endophlebitis but a meso- or peri-phlebitis); it is the only lesion of the fetal membranes and adnexa which Thomsen (1905) considers at all characteristic of syphilis.

In other cases the more intense reaction remains more defined and limited about the lymphatics and capillaries of the adventitia and of the outer zone of the media. The result is the formation, in the outer portion of the vessel wall, of a localized area composed of lymphocytes and fibroblasts, a miliary cellular gumma which bears the same relation to the lymphatics and capillaries of the wall of the large vessel that the same lesion does to the finest vessels in the internal organs. We are apt to look upon Heller's aortitis, an early gummatous aortitis, as a lesion peculiar to the aorta. But a gumma, whether it occurs in the wall of a large blood vessel or in one of the internal organs, is one and the same thing—a rather well-defined area of subacute pericapillary inflammation, due to the localization of *Treponema pallidum* in and about the terminal blood and lymph channels. The chronic inflammatory change which becomes so marked in the older gumma is not really a very essential portion of the process.

The two main types of pathological involvement of the larger vessels, in both acquired and congenital syphilis, have, therefore, much in common. That which lies at the bottom of both types is the inflammatory reaction produced about the lymphatics and capillaries of the vessel wall by the localization of the parasite. And this change is, after all, the basic and essential one, which underlies the very protean pathology of syphilis. The nature of the vascular involvement, in the infant and in the adult, depends upon the intensity of the infection and upon the degree of the resulting reaction. If the infection is light the reaction may pass little beyond what was described above as the earliest alteration noted. The endothelial proliferation leads to medial degeneration—which in its turn is followed by compensatory proliferation in both media and intima. This compensatory process is a secondary one, is only indirectly the result of syphilis, and produces a nodular arteriosclerosis of the atheromatous type, which is no more characteristic of lues than it is of any one of the large group of conditions which cause primary degeneration in the media. If the infection of the vessel wall is a more severe one, but remains limited to one or a few of the small vessels of the wall, a more intense but well defined tissue reaction occurs. If a larger number of capillaries and lymphatics of the vessel wall take part in the localization of the parasites the tissue change is a more diffuse one. Both these manifestations of more severe infection—the gummatous aortitis of Heller and the *mesaortitis productiva* of Chiari in acquired syphilis, or the gummatous arteritis and the *mesarteriitis syphilitica congenita* of Wiesner in hereditary lues—are more directly the result of the action of *Treponema pallidum* than is the chronic nodular arteriosclerosis. Whether they are due only to syphilis can be determined only by searching for treponemata in every case.

Scharpff's (1909) position, his statement that the cellular areas noted by Wiesner in the wall of the aorta and other large vessels are only normal islands of developmental tissue, appears entirely untenable. As a matter of fact, in Scharpff's description of the cases of congenital syphilis investigated by him passing mention is made of cellular infiltration in addition to the areas which he considers normal. There was pathological change, but the description is so meager that little can be said as to its nature or as to whether it bore any relationship to his so-called normal developmental areas. Certainly one sees frequently enough in congenital syphilis the lesions in the larger vessels described by Wiesner. In my own material I have seen involvement of large vessels other than the aorta more often than that of the aorta itself, and the aorta has not shown change in so large proportion of cases as in Wiesner's series. An understanding of the origin and nature of the pathology of the larger vessels in congenital syphilis is comparatively simple if the nature of the infection and the localization of the treponemata in and immediately about capillaries and lymphatics are borne in mind. I can see no reason for believing and no necessity for supposing that the course of events which leads to the formation of the vessel lesions of acquired lues differs in any essential particular from that which produces the vascular pathology of the congenital form of the disease.

Summary:

In congenital syphilis the widespread involvement of the smallest vessels, arterioles and capillaries, is more characteristic than the diffuse fibrosis which may occur. The primary vascular change consists of a swelling and proliferation of the endothelium and a slight lymphoid infiltration immediately about the arterioles and capillaries. It is set up by the transportation of treponemata by the blood stream and by their localization in and about the final vascular ramifications.

When this change becomes extreme there may be formed at one side of or entirely surrounding and replacing the arteriole or capillary the cellular area which constitutes the earliest stage in the formation of the gumma.

In the medium sized vessels there may occur, in the adventitia and media, an inflammatory reaction characterized by the presence of lymphocytes and young connective tissue cells. The earliest change is again limited to the lymphatics and the vasa vasorum of the inner adventitial zone. The involvement may become so marked that the original structural elements of the vessel wall are completely hidden by the infiltrating cells.

Localized areas of inflammation, similar in appearance and origin, may occur in the larger vessels: aorta, pulmonary artery, portal and umbilical veins.

In congenital syphilis the involvement of arterioles and capillaries is more widespread than in acquired lues. In both forms of the disease the pathological change in the larger vessels is identical in its genesis and is the expression of the entrance of *Treponema pallidum* into the lymphatics and capillaries of the vessel wall.

The further changes, especially in acquired syphilis, are dependent upon the intensity of the infection and of the tissue reaction.

If the infection and the damage produced by it are slight a nodular area of sclerosis may be produced. The resulting chronic proliferative change is not the result of the specific infection, but is a secondary, compensatory process whose aim is the replacement of medial tissue destroyed by the parasite.

If the number of organisms is greater the tissue reaction becomes more marked and more diffuse, resulting in the production of a *mesaortitis productiva* of the type described by Chiari. This type of aortitis is in the vast majority of cases the result of syphilis, but need not, apparently, be caused by syphilis in every case.

A still more marked but localized reaction results in the formation of an infiltrative, proliferative lesion of the type described by Heller, a true gummatous arteritis. Here, also, the inflammation bears the same relation to the lymphatics and capillaries of the vessel wall that the gumma of the internal organs bears to the arterioles and capillaries.

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Chronic Ureteropyelitis in Pregnancy and the Puerperium.

By OSCAR T. THOMAS, M. D., Cleveland.

In referring to the infections of the urinary tract in these chronic cases, I prefer the term "ureteropyelitis" to that of "cystopyelitis" because: first, the inflammatory changes, in the female at least, are so well defined in the ureters and so easily recognized by simple palpation; second, in most of the cases referred to me there are few or no symptoms referable to the bladder, and the ordinary microscopic examination of the urine gives no clue to the existing condition in the higher urinary tract; third, it is even impossible in some instances to secure a history of any acute disturbance in the bladder; fourth, though the subjective symptoms have been ascribed to ovarian disease, and especially to sclerocystic changes in the ovaries, the differential diagnosis can, in a majority of cases, be determined by palpation of the pelvic structures and be confirmed by bacteriologic studies of the urine; fifth, though in the majority of cases, the infection is an ascending one, the bladder may return to practically such a normal condition that the usual methods of examination reveal no pathologic change.

As I have stated, it is impossible in some cases to secure any evidence of a direct infection of the bladder, by catheterization for instance, or of a history of a possible hematogenous infection during some of the exanthematous diseases or rheumatic infections, yet by observation and study of a number of these cases I believe the infections may and do occur in early infancy. As an example of the duration of the infection within the urinary tract this case seems conclusive: From the urine of

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a young woman, 19 years old, I recovered a pure culture of *Bacillus coli.* The mother of the patient said that her daughter had had "something wrong with her urine" since she was two years old, having had at that time some prolonged febrile disturbance, the nature of which was not determined but which left the bladder and kidneys in a weak condition.

We are just awakening to the fact that these infections are by no means rare in early life, and particularly so in the female for obvious reasons. I am thoroughly convinced that they may lead to certain changes the results of which are not appreciated until the establishment of menstruation, and which are then ascribed to the organs of generation; or, perchance, the individual becomes pregnant and during the period of gestation, or more especially during the puerperium, there is an unusual activity in the latent process which leads to incorrect diagnosis and harmful attempts to counteract the supposed infection of the birth canal.

An unusual path of infection is illustrated in the following case. I was called to see a baby two and one-half months old because a putrid discharge, found upon the diaper, was said to come from the vagina. The external genitalia and the vagina were normal, but on examining the abdomen I noticed that the little one was especially sensitive over the hypogastrium and there I could distinctly palpate a thickened urachus. There had been a hemorrhage followed by an infection of the umbilical cord that had traveled by way of the urachus (probably patulous) to the bladder and thence to the kidneys. The diagnosis was a cysto-pyelo-nephritis. *Bacillus coli, Staphylococcus albus* and an unrecognized form, easily classed among the putrefactive bacteria by the sense of smell alone, grew in the cultures.

The diagnosis, as a rule, is readily made after the lapse of three or four days when any infection of the uterus would have spread to adjacent parts and exudates have formed either within the peritoneal cavity or about the uterus between the layers of the broad ligament. The absence of such tumefactions and the normal condition and appearance of the lochia, the finding of thickened and sensitive ureters, and possibly the history of previous difficulties in the urinary tract, together with the bacteriologic examination of the urine, complete the diagnosis.

The prognosis is favorable though the possibility of complications arising late is seen from the following case: On the twelfth day of the puerperium, after the patient had been about the house, she had a chill. Large amounts of antistreptococcic serum were given but without beneficial results. I saw the case four weeks after confinement. There was nothing about the uterus or its adnexa that was abnormal and involution had progressed to a normal degree. The ureters were very much enlarged, and the right kidney was palpable, very sensitive and increased in size. The urine contained *Bacillus coli* and *Staphylococcus aureus.* The pain and tenderness largely disappeared from the right kidney to appear a week later in the left with all the symptoms of an acute infection. This soon subsided but the patient still had an intermittent fever. Repeated examinations of the pelvis during this time showed the uterus and its surrounding parts free from trouble. Sixteen weeks after confinement I again saw the case. Two weeks previously she had complained of severe pain in the right side which was controlled by anodynes and hot applications, but there had developed within the right broad ligament an exudate. Incidentally, this patient suffered for days with a most intense urticarial rash and the heart was most seriously impaired either by an infective myocarditis or a toxic degeneration of the heart muscle as a result of the serum therapy. This case was given urotropin because of the general condition. Of urotropin I will speak later.

I will give the story of a few cases to illustrate. I emptied a uterus at five and a half months' gestation for a placenta praevia. On the second day the patient had a chill with a temperature of 104° F. Recalling the previous history of this case wherein, following a prolonged and difficult instrumental delivery, catheterization of the bladder had been required for several weeks, I secured some of the urine and practically all of the sediment of the centrifugalized specimen was made up of *Bacilli coli.* Under suitable medication the symptoms promptly subsided and the patient passed through a normal convalescence.

In another case, beginning at the seventh month of gestation, there developed an intermittent fever. Seemingly all clinical methods of diagnosis were exhausted to determine the cause of the fever, when one of the consultants, knowing my views on the subject of chronic ureteropyelitis, suggested that I be called. I take credit neither for the diagnosis nor for the relief given the patient because every other possible cause had been eliminated. I was able to demonstrate to the physician in charge the ease with which diseased ureters may be palpated.

I will recite one more case illustrating several of my contentions. Ten years previous to this (her second) confinement, the patient had had acute inflammatory rheumatism, followed by endocarditis with a lesion of the mitral valve and nephritis. With her first confinement she had uremic convulsions. This second confinement was passed safely, the only untoward condition being an adherent placenta which was eventually expelled without any intra-uterine manipulations. Fourteen days after labor the temperature rose to 103° F., accompanied by a severe chill. From the urine we secured an active growth of a streptococcus and *Staphylococcus albus.* During many weeks of the gestation period, and also during the second week of the puerperium, the patient had taken 15 grains of urotropin daily.

It has been my experience that urotropin (and others of the formaldehyd group) is useless in these cases of chronic bacterial disturbance of the higher urinary tracts. In certain cases of acute cystitis it is of value, but I feel sure that formaldehyd is not liberated, in the kidneys at least, in sufficient amounts to be of any germicidal value to the renal pelves or the ureters. I use creosote. How it acts I do not know, but with its results I am satisfied. It is essential that a pure beechwood and not a coal-tar product be used. The maximum dose need be only two minims three or four times each day, and with this dosage and a pure drug, I have never seen any ill effects either upon the stomach or the kidneys. Salol is the second choice. It is quite natural that I should look upon the carbolic acid as its most active constituent. I was, for many years, fearful of using creosote in acute pyelitis with nephritis and depended upon salol until the acute stage had passed, but of late I have used creosote whenever possible. It does reduce the fever and render the urinary tract sterile. Furthermore, it does, when given over an extended period of time, relieve these chronic sufferers of many of the symptoms which are the result of years of a microbic invasion of these parts.

SUMMARY.

1. Chronic infections of the urinary tract may, during gestation and the puerperium by rapid proliferation of retained bacteria and the absorption of their toxins, lead one to suspect infection in the parturient canal.

2. These infections may be of many years' duration; they may cause, from time to time, disturbances ascribed to the organs of generation.
3. Ordinary chemical and microscopical examination of the urine is not to be depended upon in these cases.
4. The diagnosis is easily made clinically, and readily confirmed by bacteriologic examination of the urine.
5. Formaldehyd preparations are not to be depended upon in infections of the higher urinary tract. Pure beechwood creosote does reduce the temperature and render the tract sterile, and when given over an extended period of time does relieve inflammatory conditions of the urinary, as it does those of the bronchial tract.

318 Euclid Ave.

Exostoses of the Os Calcis.

By GEORGE I. BAUMAN, M. D., Cleveland.

Osteophytic outgrowths upon the os calcis are not uncommon. They often cause considerable, even total, disability and are not infrequently overlooked.

According to Selka[1], Kienböck was the first to describe these exostoses. Baer[2] was one of the first to call attention to this subject and to attribute the presence of the spurs to a previous gonorrhea. Subsequent authors have reported numerous cases in which a history of gonorrhea could not be obtained.

In an examination of 90 anatomical specimens, Bradford[3] found a number of exostoses. Out of 423 radiographs of feet, taken on account of various foot troubles, Blenke[4] found spurs 16 times. In an examination of 250 men and women who had not complained of foot trouble he found bilateral spurs in one woman and two men. One would therefore be justified in saying that at least one percent of males have these bony outgrowths upon the os calcis, but it is very doubtful whether all of these should be considered pathological, as spurs, even of considerable size, may be present without causing symptoms. Following a change of relations of the overlying tissues, as in the development of flatfoot or after an injury, these cases may develop symptoms.

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The condition is most common in men about 25 to 30 years of age but is frequently found in women and may be present at almost any age.

The causes of these spurs are manifold. The contention of Chrysospathes[5] that they are all due to a so-called skeletal variation and are all found in the epiphyseal line is not supported by other authors and does not seem to be supported by the findings in the different cases. The accessory epiphysis lying posterior to the main body of the os calcis varies in its appearance (sixth to the tenth year) and in its union with the os calcis (fourteenth to the twenty-second year); it also varies somewhat in shape and size. Chrysospathes claims that the spurs are due to a misplacement downward of the epiphysis, and in some cases this seems to hold true. These cases are usually bilateral. That the great majority of the exostoses are due to pathological processes, seems to me beyond doubt. The first manifestation of this process is a periostitis which may be general or local and may lead to a general increase in the size of the bone or to the formation of osteophytes at the insertion or origin of muscles and tendons and along their course or at the epiphyseal line. These are the points of least resistance and are found to be the most frequent locations of spurs. Baer reports a general thickening of the bone in all of his cases and in one of mine it was very marked in one foot. Just what is back of this pathological process it is often difficult to say. Gonorrhea is the basis of many of these cases as it was in two of mine. The spurs may be present as more or less normal bony outgrowths and make themselves known only after an injury, in which they may be fractured, when they become, and usually remain, extremely painful. This pain may be due largely to pressure upon, or injury to, the plantar nerve. Rheumatic diathesis, arthritis deformans, influenza, tuberculosis, syphilis, ossification of tendinous tissue, and ossifying periostitis have been mentioned as causes of spurs. Blenke reports six cases at 50 to 60 years in individuals having arteriosclerosis of the leg arteries and concludes that the arteriosclerotic condition is responsible for the formation of the osteophytes; in this he is supported by Köhler. Probably the most common causes are gonorrhea, arthritis and trauma.

Pathology: These spurs are most commonly located upon the inferior surface of the os calcis, have their base at the tubercle and project directly forward, parallel with the plantar surface of the foot. With a flattening of the arch they may project somewhat downward. They are usually single but may be multiple. They are usually described as pointed or "spur-shaped" but the five that I have removed have resembled more the end of a chisel; in other words they are wider than one would imagine from their appearance in radiographs. They are not infrequently located at the point of insertion of the tendo Achillis or at the junction of the posterior and superior surfaces. The whole os calcis may be thickened, the surface irregular and dotted with small spurs. The exostoses are composed of normal bony tissue; in my cases it was cancellous and brittle. Gonococci have been isolated but no other organisms. The periosteum and surrounding tissues are usually infiltrated.

Symptoms and diagnosis: Pain is the most prominent symptom. It is most marked when the patient is standing or walking and usually disappears when he is sitting. It usually comes on insidiously but may appear suddenly after an injury. It may be of a neuritic character due to the close proximity of the plantar nerve. A tight shoe is often preferred as by the pressure upon the sides of the heel a natural cushion is formed. Two of my patients frequently went about the house on their hands and knees rather than step upon the bare feet. The pain is sometimes so severe as to entirely disable the patient; it is described as of "something sticking into the flesh" and it commonly shoots up the leg to the knee. On account of the pain the patient walks upon his toes and limps. When the spur is located posteriorly there is limitation of motion. Flatfoot may be present in these cases and may aggravate the trouble but it is not usually a causative agent as maintained by some authors. Pain similar to that caused by a spur may, however, accompany a flatfoot. There is often a thickening of the whole heel which is palpable but the spur itself, except those lying upon the posterior surface, can seldom if ever be felt. There is tenderness along the inner edge of the os calcis and practically always a small tender area in the center of the plantar surface of the heel, which, upon pressure, causes the patient to jump as if shot. This is almost pathognomonic. These symptoms, together with a radiograph, make the diagnosis certain. In taking the radiograph the heel should lie flat upon the plate, otherwise a small spur might be missed.

Treatment: Certain cases in which the spur has only recently developed and in which the symptoms are not too severe may be helped, or even entirely cured, by palliative measures. If the case is of gonorrheal origin and there is any vestige of the old trouble remaining this should be properly treated. I have used the vaccine in these cases but not with any very encouraging results. A felt or soft-rubber cushion or an excavation cut out of the center of the heel of the shoe, by removing pressure, often gives relief and may even produce a permanent cure.

In the vast majority of the cases, however, I believe that nothing short of removal of the exostosis will entirely relieve the patient. If the spur is upon the inferior surface of the os calcis an incision along the inner edge of the bone will expose it. The projection of bone with its periosteum should be chiseled off smooth with the body of the os calcis. If a bursa is encountered it should be removed as it frequently aggravates the pain. If there is a spur upon the posterior surface the incision may be continued upward along the border of the heel. Here also if a bursa is found near the spur it should be removed. Drainage may be used for 24 hours. The patient should not bear any weight upon the foot for 10 days or two weeks after the operation and should wear proper support for the arch for about one month. As a rule the patient is entirely relieved of his trouble.

The following cases are typical of the different varieties and conditions that I have mentioned.

Case 1. Male, age 32, referred to me Oct. 7, 1909 by Dr Maschke on account of trouble with the feet. Family and previous personal history negative. About two years ago patient contracted gonorrhea. About two weeks after its onset he had severe pain, first in the ball of the right foot, then in the heel, then the same in the left foot but not so severe. Had some swelling but no redness. The pain for awhile became less but during the past year it has increased and is now so severe that he has given up his work. Had baths, etc., without benefit but thinks that plates gave him some relief. At times there is a sharp piercing pain in the bottom of right heel.

Examination of feet: No visible swelling or redness about the heels. No flatfoot. Some hallux valgus of right foot, and some swelling and considerable tenderness of first metatarsophalangeal joint. Swelling and tenderness over head of left fifth metatarsal. There is some tenderness over inner edge of each os calcis and over bottom of left heel, slight over bottom of right heel.

Radiographs: The right foot shows an osteo-arthritis of the first metatarsophalangeal joint. A fair-sized spur on the plantar surface and a small one at the junction of the posterior and superior surfaces. The left shows a roughening of the plantar surface with a small exostosis. As regards the heels a diagnosis of local periostitis in the region of the tubercle with beginning osteophytic outgrowth was made.

Treatment: He was given vaccine with some permanent benefit but at the end of three months his pain was still severe and an operation was determined upon. This was performed at St. Alexis Hospital, Jan. 17, 1910. The spur was removed from each os calcis through an incision along the inner border of the heel and was found to be somewhat larger than the radiograph had indicated. The head of the first right metatarsal was also resected. Patient made a good recovery, began to walk with crutches on the ninth day and returned to work at end of three weeks. The pain in his heels is entirely relieved.

Case II. Male, age 32, referred to me Nov. 16, 1909 by Dr Shirey on account of pain in feet. Family history negative. Patient has never had gonorrhea or syphilis. Present trouble began 14 years ago with slight pain in bottom of heels which gradually became worse. For several years he has been practically a cripple. At different times he has had to quit work for intervals of weeks or months. The pain is very sharp and "feels as though the bone were sticking into the flesh." A tight shoe is more comfortable than a loose one. Patient often goes about his house on his hands and knees. He is thin, nervous and sleepless on account of his pain. Examination of the feet reveals no flatfoot. He has hallux valgus and tender bunion on the right side. There is great tenderness on pressure in the center of the right heel and some about the edge of the os calcis. The bone has the feeling of being thickened but no spur can be felt. The whole left heel is very much thickened, extending up on each side of the tendo Achillis where there is much tenderness. There is limitation of ankle-motion due to the interference of the upper spur. The bottom of the left heel is also very tender. A diagnosis of spurs was made and this was confirmed by radiographs. The latter revealed very large spurs upon the inferior surface of each os calcis and one large one at the junction of the posterior and superior surfaces of the left os calcis. (Fig. 1.)

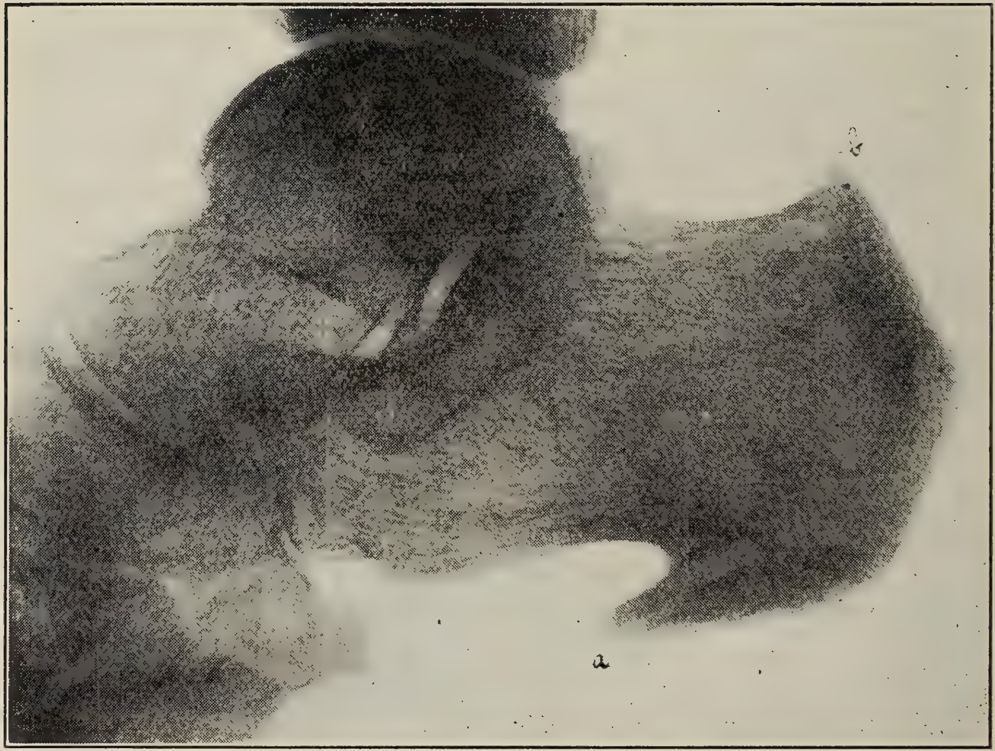

Fig. 1. Large spur upon inferior surface (a) and another (b) at junction of posterior and superior surfaces of the left os calcis.

An operation was performed at Lakeside Hospital, Dec. 27, 1909, under ether anesthesia. On the left foot a circular incision was made about the border of the os calcis from the middle of the arch to about two inches above the upper edge of the bone. Both the upper and lower spurs could be removed through this incision with little difficulty. The surface of the bone was found to be soft and rough in places and several small spurs were removed. The spur upon the under surface of the right os calcis was removed through a straight incision along the inner border of the heel. The right hallux valgus was also straightened.

Satisfactory recovery followed the operation. Progress since has been slow but steady. Patient has gained 16 pounds in weight and says he feels considerably better. The pain and tenderness about the heels is much less, although still present. The periosteum was not removed in this case and this may be the cause of the imperfect result. The case was one of unusual severity and other elements besides the mere presence of spurs enter into the case from a diagnostic and therapeutic standpoint. One author would classify the case as one of ossifying diathesis, another as an osteo-arthritis, but these terms do not aid us in determining the exact cause of the trouble. The patient is still under observation and I think in view of the progress he has made he will eventually be entirely relieved.

Case III. Male, about 34 years old, referred to me by Dr Maschke on account of pain in heels. Patient had gonorrhea nine years ago and apparently entirely recovered, so that this, in all probability, had nothing to do with his present trouble. History otherwise entirely negative. Present trouble began three or four months ago with pain and soreness in heels especially on standing. This is worse in the morning but has never been severe at any time. Tight shoes are more comfortable than loose ones. Flatfoot plates gave him no relief. Examination showed no flatfoot. There is a tender spot in the center of each heel. This was considered a very early case and it was decided to use soft rubber cushions. These gave him relief.

Case IV. Male, aged 29, first seen Nov. 23, 1909, complaining of pain in the left heel. Patient had gonorrhea one and one-half years ago from which he recovered without joint troubles. Fresh infection three weeks ago from which he has not recovered. For about two weeks he has had pain in left heel which has increased slightly. He says it feels as though there were a foreign body in the tissues. At times the pain is so severe that he can not bear weight upon the heel. Examination reveals no flatfoot. There is considerable tenderness along the inner edge of the os calcis and also in the bottom of the heel. This was considered an early case of gonorrheal origin and he was given vaccine treatment. The urethral symptoms have almost entirely subsided and at times the foot has been very much better but this improvement has not been permanent and an operation seems to be the only thing which promises him relief.

310 Osborn Bldg.

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Report of a Complicated Case of Typhoid Fever.

By S. L. BERNSTEIN, M. D., Cleveland.

The many relapses, ordinary and intercurrent, the serious complications, and the long continued illness with complete recovery, prompts me to report the following case of typhoid fever:

On November 22, 1908, I was called to see Mrs. B. J. L., aged 35. For two weeks previous to this date she had been in Chicago and there complained of persistent headache with general malaise. Returning to this city, on the day previous to my first visit, she had a severe chill followed by fever and general prostration. When seen, she had an anxious expression; short labored respiration, the alae nasi dilating with each inspiration; a short, dry, restrained and distressing cough; and a sharp stabbing pain near the axillary line on the right side. There was no expectoration. Examination revealed a marked dulness over the base of the right lung and hyperresonance of the non-affected lung tissue; crepitant rales and very slight friction sounds on auscultation. The heart was not dilated; the apex was in the fifth interspace; there were no murmurs but some accentuation of the pulmonic second sound. The spleen and liver were not enlarged. There were no rose spots and the abdomen was not tender anywhere. The urine contained albumen but no casts. The case was diagnosed and treated as lobar pneumonia.

For one week the temperature varied from 102° to 104° F., pulse 92 to 108, and respirations 28 to 30. On the sixth day a Widal test and diazo reaction were negative. On the evening of the seventh day, while using the bed-pan she had a large hemorrhage from the bowels. The temperature dropped to 99°, the pulse and respiration remaining at 98 and 28 respectively, pulse weak and compressible. On account of the severe shock caused by the profuse hemorrhage 450 c.c. of normal saline solution was introduced under the left breast with strict antiseptic precautions, a hypodermic of ¼ gr. morphin sulphate was given and the foot of the bed elevated. On examination the spleen was not enlarged; there were no rose spots and no abdominal tenderness. As the patient had given a history of a previous attack of "ulceration of the bowels" and hemorrhoids the diagnosis of typhoid fever was not definitely made. The following day (eighth day of illness) a Widal test and diazo reaction were negative, but on the ninth day both were positive and with the rise of temperature to 103° F. and its continuation at that height, and absence of any more lung invasion, the diagnosis of typhoid fever was definitely established. It was noticed 24 hours later that all the fluid introduced into the breast was not absorbed. The breast was slightly massaged and elevated.

From the ninth to the fourteenth day the temperature varied from 102° to 103°, pulse and respiration as before. The base of the right lung did not clear up. On the sixteenth day gangrene of the left breast was noticed. This continued to spread, in spite of hot bichlorid fomentations, until the entire lower half of the breast was gangrenous. After cleaning out the necrotic tissue a space so deep and large was left that several ribs could be seen. Hot boracic solution was frequently applied and in the course of time (three months) the space filled in nicely without in any way interfering with the typhoid infection.

From the seventeenth to the twenty-fourth day the temperature gradually declined to 101° F. showing on the chart the typical typhoid curve. For the following 10 days the chart shows the presence of a septic infection, in the morning the temperature being normal, 98.4° F., in the evening 101° F. Aside from the temperature no other sign or symptom of sepsis was present. The gangrene of the breast was a local infection, and treated as such. The base of the right lung did not clear up; no fluid could be demonstrated and aspiration brought forth only a small amount of bloody fluid. The heart sounds were normal and the accentuation of the second pulmonic had disappeared. The pulse varied from 120 to 140 and the respirations averaged about 32.

The first relapse occurred on the thirty-fifth day when the temperature rose to 102° F. and from then to the fifty-second day remained between 103° and 104° F. On the forty-fifth day, because of the extreme exhaustion, loss of blood from the hemorrhage, and long continued fever, the patient became irrational: this continued throughout the intercurrent relapses, and not until the one hundred and fourteenth day was the patient rational. During these days she fought every attention and was frequently very maniacal, refusing all nourishment, which necessitated the use of the stomach-tube. The spinal fluid on removal was clear and the withdrawal of 70 c.c. had no effect on the condition of the mind. The diazo reaction and Widal test persisted positive. Occasionally a rose spot appeared but the spleen was never palpable, though on percussion it was enlarged. Meningitis was positively ruled out. Prolonged exhaustion with anemia of the brain was apparently the cause of this delirious and maniacal condition.

The dulness at the base of the right lung persisted to convalescence and the question of a tuberculous infection was considered. However, beginning 114 days from my first visit, until recovery was complete, on April 4, 1909, 134 days after the first visit, the patient gained rapidly. The lung tissue, or perhaps a thickened pleura, gradually resolved and normal percussion and auscultatory sounds were heard. Phlebitis of the long saphenous vein persisted for a number of weeks. It may be interesting to note that chloral hydrate, morphin sulphate, and hyoscin hydrobromate did not quiet the patient during her mania and the various bromid salts had but a slight effect; but the sounds from a phonograph immediately quieted her, though only for a short time. The treatment was symptomatic with constant stimulation.

466 Lennox Bldg.

The Sublimate-Acetate Color Reaction with Human Feces and its Application in Normal and Pathological Conditions of the Biliary and Intestinal Tract.

By MORRIS SCHOTT, M. D., Cleveland.

In this study I do not wish to enter into the physiology of hepatic function. We are to consider only normal conditions of the hepatic excretions in relation to clinical facts with which we come in daily contact.

It is not going too far to assert that results in the application of chemical, micro- and macroscopic coprology are as important and as productive of interpretation as are our daily and common tests in urology.

Technic: In a test-tube, triturate a part of the feces (the size of a hazelnut) with 10 to 15 c.c. of water (distilled or not, preferably luke-warm but cold water will answer) and after trituration add 8 to 10 drops of sublimate-acetate solution.

The execution of this reaction is most simple, devoid of laboratory delicacies, and requires no special utensils; all that is needed is a test-tube and the sublimate-acetate solution: Distilled water 100 c.c., corrosive sublimate 3.5 c.c., acetic acid 1.0 c.c.

My remarks are based upon over 100 cases of clinical observation in which the tests were either positive or negative and always in accordance with the findings and proofs of known pathological or normal conditions.

Physiology teaches us that bile contains only one pigment, bilirubin, which when oxidized changes into biliverdin, the latter constitutes the green coloring matter in the normal stool of the newly born (meconium type).

Under the influence of the reagent the triturated feces undergo some special modifications which are immediately appreciated, but the chemistry of which has not been clearly determined.

1. A change of color possibly due to the oxidation of the biliary pigment.
2. A precipitate in the test-tube; in other words precipitation and coloration of the solid matter of the feces and an upper layer of limpid fluid of more or less density.

It is the appreciation of the color of the deposit, and to a lesser degree the color and density of the remaining liquid, which will guide us in the data and results of our investigations and often in our therapeutic indications.

Results: Coloration of deposit. The color reaction in a normal, healthy stool is pink (the rose color of peach-tree blossoms of French and German authors) while in pathological conditions it will vary to a very large degree from bright red, violet, dark or light brown, muddy or clear according to the intensity of the reaction.

Beginning from after the first up to the eighth month of infancy (usually about the second or third month) the intestinal tract, either by its mucosa or by virtue of its aerobic or anaerobic bacteria, acquires a reductive function peculiar to itself which changes the bilirubin into hydrobilirubin (stercobilin). The reaction with bichlorid-acetate indicates a normal transformation by a pink coloration of the deposit as well as of the liquid in the test-tube. This pink coloration when obtained under the provisions above indicated is characteristic of a normal biliary-intestinal function and we can be certain that the flow of bile as well as the intestinal canal, is in correct functional relation.

Physiological researches have shown (dog, cat) that this relation is true only within some physiological limits, that this element of reduction takes form from some short distance above the ileocecal valve, about 8 to 10 cm.

Green coloration. As already stated, in the first or second month (sometimes later) of life the reductive powers from bilirubin into hydrobilirubin (stercobilin) have not been established, rarely it may exist even up to the tenth month, the transformation of reductive ability can in a given case be followed by frequent tests, when the intermixture or different layers of the green and pink colors can be noticed. Once the pink color, however, is established the reaction must be constant and any color deviation must be considered a functional anomaly.

In the majority of cases a bright green coloration is indicative of intestinal catarrh which might be due to an excessive flow of bile or to a true enteritis.

White coloration. We may consider this type of reaction to correspond to a relative pigment acholia, it is indicative of a serious pathological condition, there may be complete retention of bile pigment with or without icterus, functional hepatic failure, impermeability of the ampule of Vater or other mechanical and true pathological causes.

Bright red, violet, orange colorations. Departing from the normal pink color we may meet with exaggerated or inferior tints which we might term anomalies by excess in the first instance and anomalies by default in the second. The shades have not yet been properly grouped to enable us to put each one in a separate diagnostic classification, but a sick liver will always be rendered evident by the result of the sublimate-acetate reaction if one will only try it methodically, for as soon as the equilibrium between the hepatic and intestinal functions are disturbed, we will find a constant deviation from the normal pink coloration.

Let me emphasize the law in the application of this simple test—healthy intestinal function equals pink coloration, unhealthy intestinal function equals its degree of variation from the normal pink coloration.

I believe that in infantile pathology we could often derive great benefit in our therapeutic indications as well as in general medical, surgical and obstetric cases in the application of this reaction.

Some of our European colleagues have made use of this method as an aid in the prognosis of febrile and infective diseases, whenever the equilibrium of our economy is disturbed, be it through febrile or septic conditions. Hepatic-intestinal function being good—pink coloration—the prognosis is good. Hepatic-intestinal function bad—anomalous coloration—the prognosis is bad. In other words the prognostic value of the disease is worth in proportion the result of the reaction in cases in which much depends on the relative value of nutrition and absorption.

2369 East 55th St.

Review of the Progress in Medicine.

Conducted by JOHN PHILLIPS, M. B., Cleveland.

1. Arthritis Deformans—Nichols and Richardson.
2. Purpura Hemorrhagica due to Benzol Poisoning—Selling.
3. Tuberculous Cervical Adenitis—Lewis.
4. Luetic Bursopathy of Verneuil—Churchman.
5. Metallic Tinkling in Hydropneumothorax—Barach.
6. Chronic Primary Intussusception in the Adult—Goodall.
7. Protein Metabolism in Pneumonia—Wolf and Lambert.
8. Blood-Pressure in Marathon Runners—Barach.
9. The Habitual Torsion of the Mobile Cecum—Klose.

ARTHRITIS DEFORMANS.

Nichols and Richardson (*Journal of Medical Research*, Volume XXI, No. 2, pp. 149-221, Sept., 1909) made a pathological and clinical study of 65 cases of chronic, non-tuberculous, deforming arthritis. In 26 of these cases there were complete autopsies. In one case material was obtained from a partial autopsy and in 38 from amputations and excisions. They classify the joint conditions found in this disease as: (1) *Proliferative arthritis,* in which the primary change in the joint occurs as a proliferation of the synovial membrane and of the perichondrium of the articular cavity, combined in many cases with a synchronous proliferation of the connective tissue and endosteum of the epiphyseal marrow directly below the joint cartilage. The most marked change usually is in the synovial membrane, while the extent to which the perichondrium proliferates is variable, being in many joints slight and almost negligible, while in the other cases it is very marked. The proliferation of the synovial membrane produces a layer of granulation tissue, which sooner or later may extend over the joint cartilage as a thin pannus-like layer and produces a destruction and absorption of the cartilage where it comes in contact with it. The proliferation of the perichondrium leads to the formation of a layer of specialized connective tissue, which readily transforms itself into cartilage or even into bone. The relative amount of destruction of cartilage and of new formation of cartilage and bone, varies in different joints and with different causes. At the same time a proliferation of the connective tissue of the marrow spaces of the epiphysis just below the zone of provisional calcification is taking place. This is accompanied by the formation of numerous blood vessels. This vascular granulation tissue may extend through the zone of provisional calcification upwards to the joint, causing a destruction of the overlying cartilage. Besides, there is also present an active proliferation of the endosteum of the epiphysis resulting in the formation of new bone or cartilage along the epiphyseal margin of the articular surface. This type of change may occur in the large or small joints and may be the end-result in joints infected by pyogenic microorganisms (suppurating joints); or as a result of infection with the gonococcus; in the so-called Still's disease; in single joints large or small where the process comes on insidiously without any evidence of bacterial infection; and finally as a result of fractures in the joint with partial dislocation of the articular facets. (2) *Degenerative arthritis.* In this type the earliest and primary change is a degeneration of the hyaline cartilage of the articular surfaces, the cartilage becoming softened and eroded and the underlying bone exposed so that two bony surfaces may articulate. The articular surface, which is denuded of its cartilage, undergoes marked thickening of its bony trabeculae and the marrow spaces may become nearly completely obliterated. As a result of this the exposed bone may become very dense, and highly polished, resembling ivory. The erosion of one portion of the joint surface together with the overgrowth of the remaining portion may lead to more or less extensive subluxations, or in some cases fixation of the joint. At the same time changes are taking place in the perichondrium leading to new formation of cartilage which may be transformed into bone so that the heads of the bones may be increased in size. This increase is not uniform but is irregular and nodular causing the so-called "Heberden's nodes." There is no great thickening of the capsule of the joint. Changes of this sort are seen in old people or in young persons who are physiologically old, especially in those in whom there is associated with the joint lesion, disease of the central nervous system.

PURPURA HEMORRHAGICA DUE TO BENZOL POISONING.

Selling (*Johns Hopkin's Hospital Bulletin,* Feb., 1910), reports a series of cases of purpura hemorrhagica, two of which were fatal, and alludes to some others of simple purpura, that occurred in a tin can factory, in the suburbs of Baltimore. The cases were confined to one department of the factory where a mixture of pure rubber, rosin and a coloring matter dissolved in commercial benzol was used as a substitute for solder. The can covers were coated about the margin with this thin pasty solution and allowed to dry by the evaporation of the benzol. Ten gallons of benzol were used per day and allowed to evaporate in this room. The blood picture in the serious cases was quite striking and resembled closely that of an aplastic anemia. The red blood cells showed only slight changes in appearance and shape, and the almost complete absence of regenerative forms. The platelets were very few in number. There was a leukopenia, in one case the count of white corpuscles being as low as 140 cells per c. mm., with a marked diminution of the granular types of white blood cells and a relative increase in the mononuclear elements.

TUBERCULOUS CERVICAL ADENITIS.

Lewis (*Journal of Experimental Medicine,* January, 1910, Vol. XII, No. 1) reports the examination of 15 consecutive cases of primary tuberculous cervical adenitis. This resulted in the isolation of nine cultures of *Bacillus tuberculosis* of bovine type and six cultures of human type, the classification being made on the basis of adaptability to artificial cultivation, character of growth on glycerin bouillon, virulence for rabbits and, in three instances, virulence for calves. The results of the determination of the reaction changes in glycerin bouillon due to the growth of the cultures on the medium were in general accord with the classification as based on other characteristics. One culture, otherwise of the human type, was found to give the slightly acid or even alkaline end-reaction characteristic of the bovine type of the bacillus. One culture, otherwise of the bovine type, has so far given an end-reaction more highly acid than is usual with bovine cultures. Two cultures, highly virulent for rabbits, showed even less adaptability to artificial cultivation than the usual true bovine cultures and the reaction change could not, therefore, be determined.

LUETIC BURSOPATHY OF VERNEUIL.

Churchman (*American Journal of Medical Sciences,* Sept., 1909), reports one case of his own and carefully reviews the literature of 27 reported cases. This condition is an indolent affection of the bursae, involving most often the knees—particularly in women. It is quite independent of syphilitic arthritis, the bursae involved being oftenest those unconnected with the joints, and the neighboring joints themselves being entirely free from involvement. In the secondary stage of syphilis simple hygroma is frequent; in the tertiary stage, gummatous, ulcerating and fungous forms occur. The bursae involved are those exposed to trauma; but a study of the cases makes it clear that trauma, as usual in syphilis, determines only the site which the disease will occupy. There is little or no accompanying functional disability, only slight pain, and specific treatment leads to a prompt and permanent cure.

METALLIC TINKLING IN HYDROPNEUMOTHORAX.

From an experimental study of the causation of metallic tinkling in hydropneumothorax, Barach (*Archives of Diagnosis,* Jan., 1910), concludes that this phenomenon is produced most typically, and in all probability most frequently by the escape of a bubble of air from the fistulous opening of a diseased lung below, or at the level of, the liquid. When metallic tinkling is heard as the result of a bubble of air coming up through the effusion, the sound is not produced at the bursting of the bubble on the surface of the effusion but with the separation of the bubble from the fistulous opening of the lung. Metallic tinkling can be produced either by the bursting of a bubble within a bronchial tube, when the latter is connected directly with the air chamber by a fistulous opening of sufficient size, or by a bubble arising from the moist surface of a perforated lung above the level of the liquid, if the bubble is expelled with sufficient force. The characteristic qualities of the tinkling sound are determined by the expulsive force behind the bubble, the proportion of air and liquid in the chamber, the size and directness of the avenue of communication between the resonating chamber and the external atmosphere. The author states that metallic tinkling, as we hear it in the chest, is probably never caused by falling drops, an explanation which to the present has received the widest endorsement.

CHRONIC PRIMARY INTUSSUSCEPTION IN THE ADULT.

This study by Goodall (*Boston Medical and Surgical Journal,* April 14 and 21, 1910) is based on a study of 122 cases, one of which occurred in the practise of the author, four were taken from the records of the Massachusetts General Hospital, and the remaining 177 were collected from the literature. Goodall considers that this condition is not as infrequent as is usually supposed, but that it is seldom diagnosed before operation or postmortem examination. In the typical cases there are recurrent attacks of abdominal colic, with symptoms of intestinal obstruction, the presence of an abdominal tumor, which appears and disappears with the pain, or which is constantly present but changes its shape and position, or, in the absence of these two characteristics, corresponds in shape to the intestine, together with blood and mucus in the stools. Rectal tumor, if present, is conclusive. The progressive anemia and emaciation with the afebrile course complete the picture. Pathognomonic signs are the changing character of the abdominal tumor, the occurrence of rectal tumor and blood and mucus in the stools. The presence of any one of these signs should immediately arouse suspicion. In the absence of tumor an accurate diagnosis is impossible.

PROTEIN METABOLISM IN PNEUMONIA.

Wolf and Lambert (*Archives of Internal Medicine,* April, 1910) have studied the nitrogen and sulphur metabolism in 19 cases of pneumonia of varying degrees of severity. The cases of the milder type show a smaller loss in nitrogen and sulphur than do those of more severe grades. The daily loss in nitrogen on a diet adequate to protect a resting individual from nitrogen loss may be 20 to 25 gm. During the period of hyperpyrexia excessive amounts of creatinin are eliminated. This is followed during convalescence by a subnormal excretion of creatinin, which is taken to indicate the endeavor on the part of the organism to repair the losses sustained during the height of the toxemia. In the severe cases of pneumonia large amounts of creatin are also excreted. This is seen particularly during the time of greatest nitrogen loss. During convalescence the creatin disappears from the urine. In some of the lethal cases the amount of creatin excreted on the day terminating the illness is as high as the amount of creatinin excreted. During hyperpyrexia, especially in severe toxic cases of pneumonia, unusually high amounts of undetermined nitrogen are excreted. The sulphur excretion runs more or less parallel with that of the nitrogen.

BLOOD PRESSURES IN MARATHON RUNNERS.

Barach (*Archives of Internal Medicine,* April, 1910) reports that the blood pressure in trained runners before the race is higher than that of a normal individual and there is some compensatory hypertrophy of the heart. After the race they will have a fall in the blood pressure associated with dilation of the heart.

The greater the dilation the greater the fall of blood pressure. The urine obtained from the runners after the race, showed in every one of the cases albumin, varying from a trace to a heavy cloud, and casts were also found. All but one of 19 cases showed blood cells in the urine; three showed large amounts of blood.

THE HABITUAL TORSION OF THE MOBILE CECUM.

Klose (*Münchener Medizinische Wochenschrift,* February 15, 1910) distinguishes two varieties of abnormally long movable cecum. The first is the result of chronic inflammatory disturbances, either from coprostasis or retroperitoneal inflammations, the second is due to anomalies of development. The latter is the more frequent. These patients usually go from one doctor to another and their condition is diagnosed as hysteria or neurasthenia. An abnormally long cecum may exist without causing any disturbance; when symptoms do occur they are due to relative or absolute torsion. He thinks that the pain which persists after operations for appendicitis is often due to this cause. A palpable cecum associated with gurgling, the lack of fever during the attack of colicky pain, increased peristalsis, obstipation followed by diarrhea, pain from the tugging and distention of the intestine, associated with stiffness of the latter, blood and mucus in the stools, and carbohydrate fermentation, form the picture of this condition. He gives the history of two illustrative cases.

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EDITORIAL

Poisons and Protoplasm.

The evil results of those substances which have a corrosive or coagulating effect upon living cell proteids are quite evident and comprehensible. In the case of a large group of other agencies, salts, alkaloids, products of metabolism and toxins, the way in which harm is done to the animal organism is much more difficult of ascertainment. That morphin may kill by acting upon the centers of the medulla, that magnesium may kill a rabbit and calcium bring it back to life are, of course, quite accurate statements of fact. But just what change does morphin produce in the ganglion cells of the medullary centers in order that death should result? Just what intimate cell alterations are brought about by the magnesium administered to a rabbit, and why are they such as to be overcome by calcium? Answers to such questions, knowledge of the actual protoplasmic perturbations produced by poisons, may not, perhaps, be hoped for until we know more of life itself and of the forces which combine to make up the so-called vital principle. But cell studies which consider both the physiological reactions and the morphological changes caused by harmful substances may help us, some day, to draw conclusions concerning disturbances in cellular activities from the structural alterations therewith associated.

Much work has been done upon the effects of a large number of substances upon protozoa, but the older investigations attacked the problem of the amounts required to produce death rather than the morphological changes set up. Work of the past few years is taking a more useful trend.

Nowikoff (*Archiv für Protistenkunde,* XI, 309, 1908), investigating the action of thyroid, suprarenal and hypophysis solutions upon *Paramaecium caudatum,* found that all exert a very potent influence, expressed by an increase in the visible activities of the cells and in their division rate. Solutions prepared from desiccated thyroid caused the greatest change. The greatly accelerated multiplication was not to be explained by an increase in nutriment alone, due to the addition of organic substances. Solutions of egg albumin and muscle, while they caused more rapid division, did not increase the rate nearly so markedly as the other substances. In the moderately increased division rate caused by egg albumin and muscle proteid the average size of the cells was noticeably increased. The very rapid multiplication caused by thyroid solutions was associated with no increase in size, with often a decrease—which Nowikoff considered evidence of increased chemical activity within the cell, due to the action of substances specific for the thyroid and, to a lesser degree, for the suprarenal and hypophysis. He did not study the morphological changes and did not try the effect of inorganic iodin compounds alone.

Popoff (*Archiv für Zellforschung,* IV, 1, 1909) attacked the problem from the standpoint of the production of depression, that condition of abnormal disproportion between nucleus volume and cytoplasm mass brought about by a number of factors, among which overfeeding and long continued function are prominent. He subjected several species of ciliated protozoa to the action of carbon dioxid, ammonium and urea, with the idea that these products of cell metabolism would decrease the oxidation processes within the cell and would hinder the excretion of waste products by preventing their ready diffusion into the surrounding medium. He found that urea caused no particular changes except those coincident with alterations in osmotic pressure and concluded that urea is most probably not one of the excretory products of protozoan cells. Ammonium, in all species worked with, and carbon dioxid, in those which are not facultative anaerobes, produced striking and characteristic changes: marked increase, irregularity and fragmentation of the macronuclei without corresponding increase in the cell body; cessation of division; decreased motility; division, often repeated, of the micronuclei; condensation, opacity, vacuolization and stickiness of the cytoplasm. These are all morphological changes which characterize depression. The work of many observers has shown that the final means of overcoming a depression which would otherwise be fatal is conjugation—a process which must, therefore, be considered largely a regulatory one. The first indication that conjugation is about to occur under natural conditions is the division and reorganization of the micronuclei. Since even this striking change was produced in Popoff's animals it is apparent that he experimentally caused depression by subjecting the cells to substances produced in the normal metabolism of the cells. He concluded, as R. Hertwig had done before him, that the phenomenon of depression or senescence, following long continued function, is due largely to interferences with cellular metabolism, caused by the heaping up of waste products and by disturbances of assimilation.

Von Prowazek (*Archiv. für Protistenkunde,* XVIII, 221 1910) studied the changes produced in protozoa by atropin, strychnin and quinin, and obtained most interesting and important results. He found, first, that the effects of these alkaloids varied in organisms of different ages, in those showing different degrees of vegetative activity, and even in sister cells of the same age. These differences in susceptibility he believed to be due to varying degrees of chemical activity within the functioning cellular protoplasm. From the changes produced he concluded that living protoplasm is an emulsoid, containing at least two fluid components, the "lipoids" constituting one group. While the action of the alkaloids varied with the temperature, in accordance with van t'Hoff's law for chemical activities, von Prowazek believed that the chief action of the alkaloids was a physical one, resulting in a dissociation of the living emulsoid, leading to a separation of the "lipoid" substances and to alterations in intracellular tension. The individual "lipoid" globules themselves showed variations in surface tension and became vacuolated, a phenomenon to which von Prowazek applied the term cavulation. Alkalies increased the action of the alkaloids, acids decreased and even prevented harmful action. Pilocarpin, which in dilution of 1 : 200 had no apparent effect upon the protozoa studied, was antagonistic to the action of atropin in the same dilution and would save the life of those cells which already showed such a degree of cavulation as was fatal for untreated cells. The antagonistic action of atropin and pilocarpin in mammals is generally supposed to be due to a stimulation by pilocarpin of those nerve endings which atropin paralyzes. Von Prowazek's work indicates that perhaps the antagonistic action of these two alkaloids may be dependent upon opposing effects, due to physical factors, produced in the protoplasm of the nerve endings.

The experimental work cited may not offer so very many facts of widespread application, but it does indicate a line of research which may give some valuable contributory evidence. *Paramaecium caudatum* will not and cannot replace *Canis familiaris* in pharmacological teaching and research. It is much easier to put an oncometer about the kidney of a dog than about the contractile vacuole of a paramaecium, and the results obtained in the case of the dog are much more directly applicable to man. Because of the complex interrelations of the structural elements of the human body experimentation upon laboratory mammals is necessary for the determination of the various elements taking part in the changes caused by deleterious substances. But for giving some insight into the finer alterations in the protoplasm of the cellular units, upon which the organ and tissue reactions must be dependent, cytological experimentation may be helpful.

O. T. S.

Ophthalmia Neonatorum.

It has been the writer's sad experience to have seen within the past few months three babies blind from ophthalmia neonatorum, blind in both eyes when they were first brought to him. This would certainly indicate that everything is not being done toward the prevention and in the treatment of this disease which its seriousness demands; especially when we consider the fact that the disease is largely preventable, and, when it does occur, is by prompt and intelligent treatment usually curable without damage to vision.

There is at present a law in this State requiring midwives to call a physician or notify the health authorities when in their practise a baby's eyes show any signs of inflammation at any time within 10 days after birth. In the writer's opinion a great step in advance would be made if the law required all cases of ophthalmia neonatorum to be reported at once to the health authorities, whether occurring in the practise of midwives or physicians.

But notification is not enough. More efficient treatment is necessary. While the disease is no respector of station it does occur much more frequently among the poor and ignorant where proper systematic treatment is almost impossible even in the hands of a skillful physician. Such a bady needs at least hourly care day and night and that too by a skilled attendant so that two nurses are frequently necessary. Such care is of course impossible in the families of the poor. Most of our hospitals will not admit them at all, on the ground that they are not prepared and cannot afford to take them. One of our hospitals has been receiving them for several years but will not take the mothers.

The importance of breast feeding in these cases is not sufficiently appreciated. Everything which increases the baby's power of resistance adds to the probability of success in the treatment and anything which decreases the baby's power of resistance increases the danger and the possibility of blindness. In a severe case a breast fed baby has a much better chance of recovery with good sight than has a bottle fed baby, consequently we need some arrangement by which the baby can have the two things most needful, hospital care and its mother to nurse it.

Dr Walker at St Luke's Hospital, Liverpool, has, in the writer's opinion, suggested and successfully carried out the best plan for the care of these cases. Without going into any details at this time, the method consists in having rooms or a small ward in the hospital where the mother and child can both be taken care of. As soon as a baby's eyes are found to be in such condition as to require hospital treatment, an ambulance is sent for the mother and she as well as the baby is transferred to the hospital. His results after several years' experience with the plan have been most gratifying.

Some of our private institutions might undertake this if the necessary money were provided to defray the expense. If not it seems to the writer that the city should set apart some rooms or a small ward in its hospital for the purpose. If this were generally known, midwives would no doubt be only too glad to avail themselves of such an opportunity and no less eagerly would physicians do so with their poor patients. In the writer's opinion such a plan would be the means of preventing some of these cases of blindness with all that it means to the unfortunate victim, and incidentally also with great saving financially to the city and State. The State could even better afford to contribute to the care of such cases than to pay $100 annually as a blind pension to such a person for life or to spend large sums for their education in institutions for the blind. W. E. B.

The Late Geheimrath, E. F. W. Pflüger.

E. F. W. Pflüger, whose name is probably the best known of all in the domain of physiology, died suddenly at Bonn last month. Although 80 years of age at the time of his death, Pflüger was in full harness as a research worker until the very end and, not only that, but the magnificent brilliancy of his earlier work was well maintained throughout the whole 60 years of activity. Müller, Helmholz, Ludwig, Heidenhain and Pflüger are unquestionably the names that will go down to posterity as the leaders among physiological investigators during the nineteenth century, not only in their own country—to shine in which, among the very great investigators which that country has produced, is in itself an enormous achievement—but in the whole of the learned world.

There is practically no chapter in physiology in which Pflüger's name is not indelibly written. One characteristic of his work is the fact that to each phase of it he devoted all, or practically all, his attention until he had come to some definite conclusion. Having worked for several years in one subject, he would almost entirely abandon that and proceed to some new field to which again he would devote his whole time and talent. Thus from 1853 to 1860 his work was on the physiology and psychology of the nervous system. It is to him, and to Goltz, that we owe the discovery that the spinal cord is an independent portion of the nervous system, acting as a nerve center as well as a conducting structure. Other fundamental discoveries of Pflüger in connection with the nervous system are the existence of inhibitory fibres to the intestines (1857) and the laws of electrotonus (so-called Pflüger's law, 1858). From 1860 to 1863-1865, his work was mainly embryological and anatomical and included the description of the development of the ovum in Pflüger's tube (1863), the mode of ending of nerve fibres in gland cells (1865), etc. In 1865 he began his comprehensive investigations in metabolism which continued more or less unbrokenly until his death.

At first the problems attacked were concerned with the condition of the gases in the blood, lungs and tissues. For these investigations Pflüger invented various forms of apparatus (blood pump, lung catheter, aerotonometer, etc.) which were of such accuracy that they have been only slightly modified by subsequent workers.

As an outcome of this work, Pflüger demonstrated that oxidation occurred, not as had previously been believed, in the fluids of the animal body, but in the tissue cells themselves (1875). He concluded, further, that the laws of gas diffusion are adequate to explain the interchange of gases between blood and lungs and blood and tissues, a doctrine which is, however, not universally accepted. The behavior and importance of proteins in metabolism was then investigated resulting in the conclusion that there must be at least a certain amount of synthesis of this group of substances in the animal tissues just as there is in plants (1882). This conclusion has been amply justified by the recent work of Fischer. Abderhalden, and others. In connection with this work, Pflüger showed himself thoroughly familiar with all the latest progress in chemistry, and indeed, he contributed not inconsiderably to this science by elaborating methods for the quantitative estimation of urea, nitrogen, sugar and glycogen. Pflüger's controversies with Voit regarding the derivation of body fat from proteins and the exact rôle of protein in the metabolism of the cell brought into evidence his remarkable intellectual and critical powers. The last of these famous polemics appeared in 1899. Pflüger's latest researches were on the subject of carbohydrate metabolism and the cause of diabetes. This work was begun about 1893, his activity therein being exhibited in a remarkable review and criticism of previous work, which appeared in 1903 (second edition, 1905). Although it is probable that Pflüger took a false stand with regard to the derivation of carbohydrates in the body, yet his work has been of immense importance and has unquestionably been the means of stimulating a greater accuracy and thoroughness in the investigations in this field.

Many of Pflüger's writings were of a philosophical or speculative character and included the teleological mechanisms of nature, the nature of life, the determination of sex, etc. In 1868 Pflüger started the publication of *Archives für die gesamte Physiologie.* This journal quickly grew to enormous proportions (five volumes a year being sometimes published) ; it is now volume 132. It includes a great part of the most important physiological literature of recent years.

With all this activity, Pflüger attended closely to his professional duties, his lectures—so I am told—being always brought carefully up to date. He was very unapproachable, in his later years at least, never attending the meetings of learned societies, nor offering any encouragement to those who sought to visit him in Bonn. He was a hermit in science, though known to all men by his remarkable writings. J. J. R. M.

Present Views on Tuberculosis.

The subjects discussed in the Tuberculosis Conference at Stockholm[1] were: 1. The care of healthy children of tuberculous parents. 2. Tuberculosis in the schools. 3. Report on sanatoria. 4. Specific diagnosis and therapy.

Separation of sick from the well is more and more insisted upon. During the past year hospitals for consumptives have received unusual attention and they have been more conspicuously considered than sanatoria. The removal of healthy children to homes in the country is strongly recommended, and societies for accomplishing this are multiplying everywhere. One of the conclusions voted was, "Until registration of advanced cases is recognized we can not hope for any great success in prophylaxis."

In the report on tuberculosis in the schools, the statistics from the examination of 15,219 children in Sweden were given, showing that 1.61% (245) presented symptoms of tuberculosis. It was estimated that there were 400 cases of tuberculosis among 26,500 school children of Stockholm, 75% being in the first stage, 21% in the second stage and the remainder in the third stage. The sanitary state of these children was variable. The most unfavorable results were furnished by the sections inhabited by the poorest classes. One quarter of these cases showed an hereditary taint. Tuberculosis families furnished a much larger proportion than healthy families. Segregated and open-air schools are urgently recommended to meet this contingency. The following law regarding teachers is enforced in Denmark. "No teacher shall be employed in any public school unless proof has been supplied by medical certificate, dated not earlier than three months previously, that he is free from infectious tuberculosis of the lungs or the larynx. If any teacher is discharged on the ground of being diseased from infectious tuberculosis he shall be allowed a pension in proportion to two-thirds of his salary." The law regarding tuberculous children compels the close surveillance of suspected cases and provides separate instruction for them.

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[1] VIII International Tuberculosis Conference. Stockholm. Pp. 542.

The report on sanatoria concerns chiefly the cost of the public sanatorium. There are so many people to care for, the expense must be as small as possible. The conclusion is that a sanatorium with 150 beds should have two physicians, 29 attendants and employes. The cost should be $1.00 a day. The cost of operating sanatoria in America is from $10.00 to $18.00 a week; anything above $13.00 a week is considered extravagant. Evidently institutions are much more economically operated in Europe than here.

The discussion of serum diagnosis and therapy was extensive and was conducted by Arloing, Courmont, Rau Calmette, Denys, Neisser, Guinard, Turban and others. Arloing and his school still hold to the superior excellence of the sero-agglutination method which he has supported for 12 years and more. It is innocuous, rapid, can be repeated, its significance is not recognized by the patient, it has a local diagnostic value (pleural effusion), it is prognostic (by variations of agglutination) and diagnostic (positive in 85% of cases of tuberculosis). Although many have confirmed Arloing's observations the method has never, even in France, come into general use.

Calmette declared that the cutaneous reaction shows the presence of a tuberculous focus, old or calcified as well as others, and thus proves too much. It is useful only with children under three years. The ocular reaction enables one to determine with more certainty lesions active or in evolution; based on 20,000 published observations it is positive in 92%. There were 80 cases of keratitis or severe conjunctivitis in these 20,000 cases. The dermal or intradermal method (Mantoux) has the inconvenience of detecting latent forms of the disease, so that the diagnosis can not be established exclusively by it.

Turban's conclusions, being those of a most expert clinician, are valuable. He rejects absolutely the ophthalmic test as dangerous, distrusts the cutaneous test as insufficient, admits the exactness of the opsonic index but regrets its difficult technic, and relies on Koch's old tuberculin as having the greatest diagnostic value. The use of tuberculin hypodermically must be associated with the most careful physical examination, as a local reaction in the lungs without general fever may be present and can thus be detected. The judgment on serotherapy may be thus summed up: Serotherapy applied to tuberculosis has not as yet produced results sufficiently appreciable, constant and complete to enable us to believe that we are in full possession of a truly specific immunizing and curative treatment.

The one point on which all men seem to agree is that serotherapy is dangerous in early febrile active cases, but often useful in stationary cases even with slight fever which latter (the fever) it even sometimes abates.

Of the recent publications dealing with tuberculosis, the books of Knopf, Otis and Hutchinson are semipopular. Dr Knopf's[2] recently reviewed in these columns, is an optimistic appeal and shows clearly that tuberculosis is preventable. Dr Otis' work[3] is a systematic treatise, carefully considers all phases of the subject, and is a valuable book for the practitioner and the layman who is especially interested. Dr Hutchinson's book[4] is a charming literary effort and discusses in a very attractive manner such subjects as rest, sunlight, camps, the country, financial strain, climate, hope, etc. The chapter on climate and health makes the book. The author has a personal knowledge of all the health regions and writes most impartially about them. He is not dominated by the idea "climate" but shows how climate can be intelligently used. Rarely has this subject been put before the public in a more practical, common-sense way. The chapter goes with a swing and verve that carries the reader on with increasing interest. There are many delightful bits of description and not a

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2. Tuberculosis, a Preventable and Curable Disease. S. A. Knopf. Moffat Yard & Co. N. Y. Pp. 350.
3. The Great White Plague. Edward O. Otis. T. Y. Crowell & Co. Pp. 321.
4. The Conquest of Tuberculosis. Woods Hutchinson. Houghton Mifflin Co. Pp. 138.

little of good writing. These books show the need and demand on the part of laymen for information on this subject.

On the occasion of the twelfth anniversary of the founding of his sanatorium in Davos, Turban[5] has collected and published in a new form the papers that have gone out at intervals from his institution. The classical autopsy is here reviewed in which Virchow claimed to demonstrate the vicious effects of tuberculin and gave a shock to the treatment that has never been overcome. Turban's history of the case and his comments are an interesting bit of history and dull the sharpness of the criticism. The opsonic index is extensively reviewed and the author insists strongly on the value of this method in diagnosis and as a guide in treatment, but admits that it is a time-robbing method. As may be expected he is a strong advocate of the usefulness of the high mountain climate. He reproduces his studies on the increase of the red cells in the blood of those living in high altitudes. He is an advocate of an inherited predisposition to tuberculosis and attempts to prove that a diminished resistance in a particular area of lung is inherited. Thus he cites many families in which the left apex alone was attacked and quotes Brehmer's cases of inherited lupus on the left cheek. This collection of essays is a valuable contribution to the literature of tuberculosis and it was well worth while gathering them together in permanent form.

The *Journal of Out Door Life,* the organ of the National Tuberculosis Society, has been moved from Saranac to New York. Since its establishment it has been under the charge of Dr Lawraison Brown who was personally responsible for its management and contents. This publication is a happy combination of scientific and lay reading, and has always been well edited. It has carried a message of hope continuously. It has always meant much to the many invalids who have seen it, as well as to the technical reader. Its tendency has been more to methods and therapy than to pathology. There is so much of the art of new living in the life of the consumptive that he needs a constantly renewed source to which he can turn for refreshment.

J. H. L.

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[5] Tuberculose—Arbeiten. K. Turban. Davos. Pp. 275.

In Memoriam—Isabel Adams Hampton Robb.

On Friday afternoon, April 15, 1910, as the result of a street railway accident, the world lost the services of one of its most valuable and distinguished women, and sorrow was brought to innumerable hearts. It is fitting that upon these pages there should be recorded some token of esteem and appreciation of one whose ideals and life work were so closely entwined in the history of modern medicine.

Isabel Adams Hampton Robb, born at Welland, Ontario, Canada, in 1860, received her preliminary education at the Collegiate Institute, St. Catharines, Canada, and graduated from the Training School for Nurses of Bellevue Hospital, New York, in 1884. After a short experience in private nursing, she became Head Nurse in the famous Woman's Hospital of that city. She resigned this position to go to Rome, where nearly two years were spent in nursing in connection with the American Institution of Nursing. Her experience in Italy made a deep and lasting impression upon her mind and served, no doubt, to develop that appreciation of art and culture that was so striking a characteristic of her maturer years.

Returning to the United States in 1886, she accepted the position of Superintendent of the Illinois Training School for Nurses associated with the Cook County and Presbyterian Hospitals in Chicago. Here, in reality, began her career as organizer of proper training for nurses and reformer in hospital and private nursing. In less than three years she not only transformed nurses and nursing in these important hospitals and won the respect and admiration of the leading medical men in Chicago, but gained a national reputation.

At the opening of the Johns Hopkins Hospital in May, 1889, Mrs. Robb was chosen by that rare and accurate judge of character and ability, President Daniel C. Gillman, to be Superintendent of Nurses and Principal of the Training School for Nurses. Called at the age of twenty-nine, at a critical period in the development of medicine and nursing to the most important post open to her profession in this country, thoroughly alive alike to her responsibilities and opportunities, Mrs. Robb soon proved herself more than equal to both. In her address at the opening of the Johns Hopkins Hospital, Mrs. Robb announced three cardinal principles which were the basis of her actions and which have been the means of elevating and developing nursing in this country. These principles were increased educational, intellectual and moral qualifications in candidates for admission to the training school; shorter hours of ward and other practical work and more time for lectures, study and recreation; and lastly, pay for nursing during training. By her elevated ideals, strength of mind and faculty for leadership and practical accomplishment, as well as by her grace of manner and charming personality, she won as willing coworkers and fast and lasting friends, not only the President and Board of Trustees, the Medical Staff and her own assistants and pupils, but the brightest and best of the cultured and social life of Baltimore. As young medical men of ability and ambition were drawn to the hospital by what it stood for in the medical sciences, so young women of education, refinement and position, were attracted from all parts of the country to the Training School for Nurses. As Superintendent of Nurses, Mrs. Robb tried to so conduct her staff as best to care for the patients, and to anticipate and fulfill the wants of the medical staff. As Principal of the Training School for Nurses she endeavored properly to prepare young women in the principles and practise of nursing, to fit them for service in a dignified calling in the care of the sick under the direction of physicians. Her standards and methods have been widely adopted and many of her pupils fill important positions. She contributed directly and indirectly largely to the reputation of the Johns Hopkins Hospital. In 1893, she was Chairman of the Subsection on Nursing at the World's Fair at Chicago and at that time organized the Society of Superintendents of Training Schools for Nurses.

After five years' service, Mrs. Robb resigned her position at the Johns Hopkins Hospital and, in June, 1894, was married at St. Margaret's in London, by Cannon Farrar, to Dr Hunter Robb. Her bridal bouquet was the gift of Florence Nightingale, and Cliveden was placed at their disposal for the honeymoon. In November, 1894, Dr and Mrs. Robb came to Cleveland.

Though domestic in her habits and devoted to her family, Mrs. Robb early took and has since maintained an active part in social and benevolent affairs. Soon after coming to Cleveland she became a member of the Board of Lady Managers and Chairman of the Training School Committee of Lakeside Hospital, Cleveland, and also a member of the Executive Committee of the Board of Lady Managers. From its incipiency, Mrs. Robb took an active and guiding interest in the Visiting Nurses Association of Cleveland.

Nor did her activity in national affairs pertaining to nursing abate with her marriage. She organized the Alumnae Association of Nurses of the United States and was its President for five years. Mrs. Robb organized, and at the time of her death was director of, the Course on Hospital Economics in The Teachers College, Columbia University, New York. Last year she served as President of the Society of Superintendents of Training Schools for Nurses, and was a delegate from this country to the International Meeting of Nurses, in London, over which she presided for one day. She was a member of the War Relief Board of the National Red Cross Society. Mrs. Robb was instrumental in starting, and took a lively interest in, the American Journal of Nursing. She was to have read a paper on the Future of Nursing, at the Jubilee of Nurses in New York this month.

Mrs. Robb was a prolific and ready writer on subjects connected with nursing. In addition to numerous papers and addresses, she was the author of three books: Nursing, its Principles and Practice, 1894; Nursing Ethics, 1900; Educational Standards for Nurses, 1907; all of which have had a wide circulation and are standards in their respective fields. To the end, she gave freely and generously of her time and substance to the cause of nursing, which was to her so largely the cause of humanity. She was universally beloved and admired by trained nurses the world over and was by them held as second only to Florence Nightingale.

Mrs. Robb entered upon the stage at a critical time, when, owing to the great and rapid advances in the knowledge of the causes, lesions, course and treatment of diseases, radical changes in the care of the sick became imperative. Throwing herself into the work with enthusiasm and always in advance of the times, she seemed to possess the rare trait of advancing by easy gradients and thus avoided disconcerting her followers by too sudden leaps. In our time no other calling has had so powerful and generally recognized a leader. Truly, she occupied a unique position in the world.

Mrs. Robb won the friendship and admiration of numbers of men and women distinguished in education, government, philanthropy and social life, as well as in the medical profession. Her counsel and cooperation were sought and freely given in a wide range of activities.

Mrs. Robb was a woman of splendid and commanding presence, of high ideals and courage, of strong intellectual and moral endowments, of winning graciousness and becoming modesty of manner, of warm and generous sympathy and of striking personality. With a high sense of honor, she was direct and simple of speech. Unspoiled by success, hers was the simplicity of the elevated in spirit. She was a devoted wife and mother, a true and generous friend and a charming companion. She played well and truly a great part in the world, which she rendered better. Her memory will be cherished by many warm admirers and by hosts of devoted friends in all walks of life.

The Ohio State Medical Meeting.

The sixty-fifth annual meeting of the Association will be held in Toledo on May 11, 12 and 13. The program indicates that the meeting will be one of the most instructive and satisfactory that has yet been held. The local committee and all the officers who have had to do with making the necessary arrangements have evidently covered the ground well and satisfactory provisions have been made for entertaining a large number of the profession. A number of men of national reputation will deliver special addresses and the titles of the papers on the program show that all lines of professional work will be represented. The social events of the occasion promise to be most enjoyable and we sincerely trust that the efforts of the Toledo profession will be rewarded by a large attendance.

Department of Therapeutics.

Conducted by J. M. McGEE, M. D.

Diplosal: *Merck's Archives* for March contains a comparative study by Nikolai Gawrilow, of the action of the salicylic acid preparations on the gastric digestion. Sodium salicylate, as well as many of the other combinations of salicylic acid, frequently give rise to gastric disturbances, especially in patients with organic or functional disturbances of digestion, which may be so severe, that the further use of salicylates is excluded. A desirable combination should possess the largest possible percentage of salicylic acid, yet should pass through the stomach unchanged. It should have the properties of an acid, and be tasteless and odorless. In the intestinal tract it should be slowly converted into the salts of salicylic acid, as a result of pancreatic digestion; these salts should then be absorbed by the blood, so that a gradually increasing therapeutic action should be obtained. Recently a new synthetic compound, diplosal, the salicylic ester of salicylic acid, or salicylosalicylic acid has been introduced. It differs from all previous compounds in that the therapeutically inactive acetyl radical is replaced by salicylic acid itself. It would seem that further search for an ideal compound of salicylic acid is unnecessary, as it has been found to be well tolerated, does not give rise to albuminuria, even in daily doses of six gm. (1½ drams) given for several weeks; nor were tinnitus aurium, nor profuse perspiration seen. This is probably to be explained by its very slow decomposition in the intestines. Gastric disturbances of any kind were absent. The excretion of diplosal through the urine is almost as rapid as with salicylic acid, in that it is complete in 48 hours after a single dose. The doses of diplosal given were 0.5 to 1 gm. (7½ to 15 grains) three to eight times a day, and daily doses of 2 to 4 gm. (30 to 60 grains) were well tolerated, even by young chlorotic girls. So far as the therapeutic efficiency of diplosal in acute and subacute articular rheumatism is concerned, no difference could be detected between this drug and sodium salicylate in equal doses. In large doses, however, displosal is more efficient, as sodium salicylate in such doses (up to eight gm. daily) would most certainly cause toxic symptoms and gastric disturbances. He concludes that diplosal is an excellent drug, since it yields a very high percentage of salicylic acid, does not affect the stomach, and is slowly hydrolyzed in the intestinal tract, under the influence of the pancreatic juice and in this way is uniformly absorbed.

Coal-tar Derivatives: In the *Monthly Cyclopedia and Medical Bulletin*, Charles E. DeM. Sajous considers the opposition that has arisen to the use of coal-tar derivatives. He believes, however, that the point to decide is whether, in order to relieve pain, the field is once more to be handed over to opium and its alkaloids. The sins attributed to the coal-tar derivatives, however, have not been through the medical profession, but through lay manufacturers of headache powders. If such a reason were to prevail among those who oppose the use of these agents in practise, or their retention in the pharmacopeia, then all our valuable therapeutic agents should be similarly treated, and even the fate of opium and its analgesic salts would be sealed by the evil reputation of soothing syrups, etc. The most important phase of the question which bespeaks their retention among our official remedies, however, is the relatively small proportion of coal-tar habitues as compared to the victims of the morphin habit: here they are of inestimable value to the physician, as even the most active agents of this class used in medicine are practically inoffensive as a cause of drug mania. As Sollmann states, they have occasionally caused the development of a drug habit with craving, and withdrawal symptoms. An individual predisposition appears to be necessary, for the condition is relatively rare. The tenacity of the opium habit is great, while withdrawal of the coal-tar products gives very little trouble. Under the gradual withdrawal of the drug, tonics, and the bromids, with a little cannabis indica to subdue pain, if any, prompt recovery ensues. The opiates grip the patient as would a vise, while the fetters of the coal-tar products are such that even a slight effort will loosen their hold. As to the poisonous effects of coal-tar products, we find that in practically every instance the fatal results were due to their use either in excessive doses or in disorders in which experience has shown them to be contraindicated. No well informed clinician uses these agents as antipyretics nowadays. The fatal results from "orangeine" "bromo-seltzer," etc., are outside the pale of professional responsibility, though within reach of legislation. The average dose of acetanilid in the pharmacopeia should be reduced from four grains to two and one-half grains for an adult. Summarizing, it seems that far from being harmful in professional hands, these agents furnish us the only means to avoid the use of opium or its derivatives, and if their use were limited strictly to physicians the fatal cases would be practically nil.

Mucous Colitis: In the *International Clinics* (Vol. 1, series 20) Dudley Fulton discusses the treatment and results of 158 cases of chronic mucous colitis. The treatment was based upon the principle that chronic mucous colitis is secondary to chronic constipation and the indication then is to cure the latter. In his opinion the difficulties in curing chronic constipation, and our lack of knowledge of its pathogenesis, are responsible for the difficulty in curing mucous colitis. Contrary to usual custom, no treatment was directed primarily to the nervous condition of the patient. The so-called neurasthenia and nervousness, from which most of these cases had previously been told they were suffering, disappeared of themselves when the spastic condition was cured. It should be emphasized that the average colitis patient, besides suffering from spastic constipation, is subnourished and has abdominal distress caused by the presence of gas and mucus in the colon, that in turn produce many reflex symptoms,—palpitation of the heart, dyspepsia, nervous irritability, mental depression, insomnia, and other nervous manifestations. Most of the cases were put to bed and given a combination of the rest treatment and measures directed to the relief of constipation. The diet in most instances consisted of raw eggs and milk because it is sufficiently nutritious, and furnishes small intestinal residue and is therefore non-irritating: he has not had good results with the coarse diet which Noorden has recommended. Improvement in nutrition is very important in the treatment of chronic colitis, because it is the most effective weapon for reducing the high irritability of the nervous system, as shown by the well known beneficial results of rest and "forced feeding" in neurasthenic conditions. To favor the relaxation of the colonic spasm, belladonna or atropin (usually the tincture of the former in 10 drop doses) was given three or four times a day. When indicated, various carminatives and nerve sedatives were added. Depending upon the amount of mucus and gas, the colon was flushed once or twice daily: no effort was made to introduce the colon tube more than six or eight inches. One or two quarts of warm saline was the fluid used, and warm olive oil or linseed oil, as much as could be comfortably retained, was injected before retiring in cases with hard, dry and lumpy stools.

Bronchial Asthma: John B. Huber, in *Therapeutic Medicine* for April, states that the first thing to do in the treatment of bronchial asthma is to relieve the seizure and this is most effectively done with a subcutaneous injection of morphin and atropin. Chloroform or ether inhalations are also wonderfully and promptly alleviative. Chloral hydrate may be given; oxygen may be used; amyl nitrite pearls may be broken under the nostrils; an enema may be necessary; or we may have to empty an overloaded stomach by a hypodermic of 1/10 grain of apomorphin. A powder of stramonium, nitrate of potassium, cascarilla and ipecac may be burned and inhaled. Other sedatives are belladonna, henbane, cannabis indica, antimony, lobelia, stramonium and the bromids. As soon as possible we attend to elimination by the rectum, the kidneys, and the skin. A subcutaneous injection of ⅛ gr. pilocarpin may be appropriate and even venesection may be considered. But there are few asthmatic seizures that will not yield to morphin and atropin as first mentioned. After relief of the paroxysm we seek the cause and we treat all lesions of the upper air passages. Various climates may have to be tried, but in a general way dampness in air or soil is not generally favorable to asthmatics. We cure, if we can, bronchitis and such other pulmonary lesions as may conduce or be contributory to the asthma. When heredity predisposes we develop the general health. As to diet, the stomach should never be overloaded: light meals with some food between if necessary, and dinner in the middle of the day, so that the 3 a. m. paroxysm may be avoided. As to medication for the thickening of the bronchial walls and enlargement of the bronchial glands, we persist in the use of iodid of sodium or potassium (or both together) in 10 to 20 grain doses, three times a day. Inunctions of iodin in some form may be used. The mineral waters containing iodin may also be of aid.

Vesical Irritability: In the *Therapeutic Gazette* for March, Charles W. Bonney, in considering the treatment of vesical irritability, believes that a simple hyperacidity is liable to produce the condition, especially in children and adolescents. In such cases the administration of alkalies, well diluted, together with the proper regulation of the diet, will soon afford relief. It is important that the bowels be kept free. If there be an excess of indican in the urine, 20 grains of sulphocarbolate of sodium in divided doses during the day will prove of value. Meat should be reduced and vegetables increased. In those cases in which the urine is neutral or slight alkaline, whether due to general nervousness or deposition of the phosphates, improvement generally follows under acids, tonics, and regulation of the diet. Dilute phosphoric acid is here a good remedy, combined with elixir calisaya or small doses of tincture of nux vomica. For the nervous depression, one-tenth grain of zinc phosphid three times daily may be given with advantage. Children and old persons are especially prone to develop vesical irritability after exposure to cold and dampness. These cases are sometives called cystitis, but erroneously so, and Caspar has called this condition the precursor of cystitis. For very young children fractional doses of belladonna, given with a few drops of sweet spirits of niter, soon afford relief. For older children the belladonna may be given in infusion of couch grass and buchu, one-half ounce of each to the pint of water, and best given hot. After the case has improved the belladonna may be omitted, and when the urine is hyperacid small doses of citrate of potash may be added. In old men, in whom prostatic hypertrophy is to be thought of, anodynes and demulcents are indicated, together with alkalies or acids as the case may be. Twenty drops each of the fluid extracts of buchu and couch grass, and the same of tincture of hyoscyamus, every three hours has proved an effectual combination. In cases, especially in women, with frequent and sometimes painful voiding, dribbling at the completion of the act, and sometimes inability to retain the urine when desire to expel it comes on, the tincture of cantharides is an exceptionally potent drug in doses of one or two drops twice daily, often working like magic from the outset. Another valuable drug, but little known to the regular profession, is apis mellifica, the active principle of which is the poisonous substance secreted by the honeybee. The dose is about one or two drops. The eclectics prize it highly when micturition is not only frequent but scalding.

Hexamethylenamin: In the *Journal A. M. A.* for April 16, Edward J. Brown reports as to the value of hexamethylenamin in suppuration of the middle ear and sinuses. Attention has recently been called to its use in acute suppuration of the middle ear by W. M. Barton, and the natural inference is that the drug would also be eliminated through the mucous membrane of the nasal sinuses. He reports two such cases in which rapid improvement followed the use of the drug. One of the cases is that of himself, he having suffered from a chronic suppuration of the right antrum dating back to the grippe epidemic of 1889: four years ago the ends of both middle turbinals were removed with slight improvement, but a renewal followed with every new cold in the head. He was slowly recovering from an attack which had lasted all winter, with persistent discharge of yellow pus, and an unpleasant subjective sense of fetor when the sinus discharged its contents. Within 48 hours after beginning the five grain doses of hexamethylenamin, the yellow discharge practically ceased, the sense of fetor disappeared, and after only six days' use of the drug, the discharge was white, mucoid, and slight and the head greatly relieved.

Cardiovascular Disease: Louis Fangeres Bishop, in the *Medical Reveiw of Reviews* for March, divides the treatment of cardiovascular disease into two essential parts. In the first instance we are called upon to treat various functional derangements that have caused inconvenience, and we are called to modify structural changes or prevent their advance. The first great element in treating cardiovascular disease is rest, because that gives an opportunity for the heart muscle to recover itself. It also removes the cause of hypertonicity of the blood vessels. Mental and physical rest is, therefore, the first thing to be thought of in every case of heart disease when it first comes under observation. A little later we have to begin exercise, and properly apply it to get good effects. The third great element in treating cardiovascular disease is diet, When the system in an acute case is overloaded with waste products, then a diet of milk is good for a time. But a milk diet is a starvation diet and does not provide the heat units that the body uses up, but for a temporary diet it is a very good thing indeed. The method of feeding is important. There is a very close relationship between the heart and the stomach, especially in elderly people with cardiac disease. Occasionally a patient dies of heart disease after a heavy dinner. Heart patients may eat often but must never eat too much. The drug treatment of heart disease is dependent upon individual judgment at the time being. His own reliance is upon good digitalis. He believes thoroughly in the value of sodium iodid in not only modifying structural changes in a degenerated heart and blood vessels, but also as having a beneficial functional effect. So many patients express a feeling of betterment very soon after taking it, that he believes it has some effect, perhaps analogous to stimulation. Atropin has always been a disappointment to him, although many have faith in it. Medicine is an art and one has to elaborate his treatment for the individual case.

Influenzal Septicemia: James D. Madison, in the *American Journal of Medical Sciences* for April, asserts that it can no longer be doubted that more or less frequently the influenza bacillus invades the blood stream. As to the treatment of the resultant influenzal septicemia, we have as yet no specific. The main hope of the future is that some successful serum will be obtained. Sera have been produced and in some cases were thought to be of some value in experimental infections, but he is not aware that any serum has been used clinically. Homologous vaccines should be given a trial when they can be obtained, and good results have recently been reported with vaccines in several cases of streptococcic endocarditis with septicemia. In the general management of these cases one may follow the methods in vogue in treating typhoid fever in regard to hygiene, rest in bed, diet, and hydrotherapy; though, as a rule, influenzal patients do not tolerate well the application of cold. Convalescence should be carefully managed. These patients especially need fresh air and nutritious food. It may take weeks or months before the patient is entirely recovered.

Puerperal Eclampsia: Coughlin summarizes his conclusions as to the treatment n the March number of *American Medicine,* Robert Emmet of puerperal eclampsia: (1) There is no expectant treatment in a consideration of puerperal eclampsia. (2) Early emptying of the uterus will bring about the best results. (3) Veratrum viride is a very important drug in the treatment of convulsions due to the toxemia of pregnancy. (4) Atropin sulphate should be tried in desperate cases, especially when there is a tendency to pulmonary edema. (5) While careful nursing, hot pack applications to the kidney region, and diet are important, the prime indication for treatment is the early evacuation of the uterus: thus bringing about improvement in the metabolism; improvement in the circulation by reducing blood pressure; improvement in the condition of the urine; improvement in the temperature, pulse and respiration; saving the heart and cardiac muscle from unnecessary strain;—in a word, the bringing about of metabolic changes so that the balance between absorption and elimination has been arrested in favor of elimination.

Continuous Warm Baths: A. Rose, in the *Medical Council* for March, calls attention to the value of the continual warm bath in the treatment of cerebrospinal meningitis. He first used it in the cerebrospinal epidemic of 1871 and 1872 in New York, and while the usual drug treatment by bromids, iodids, morphin, etc., had no perceptible influence on the disease, the effect of the continuous warm bath was quite satisfactory. His method was to place the patient, as soon as he became delirious, in the bathtub, keeping the temperature of the water at about blood-heat or one or two degrees less, and leaving the patient in the water until he became calm and fell asleep. This took sometimes two hours sometimes as long as six hours, and in some cases had to be repeated several times a day. All the 12 cases treated in this way, to the exclusion of medicine, recovered. In acute maniacal conditions, or acute delirious states characterized by great motor activity, the prolonged warm bath has proved very efficacious. In burns, the action of the continuous bath is manifold: it gives almost immediate and even complete relief from pain and can be considered the most excellent anodyne; the water penetrates the burnt tissues, they remain moist and soft, and the wound is constantly kept clean. In many cases of lacerated wounds of hands and feet, in which the question of amputation and how much to amputate is difficult to decide, the continuous warm bath is still the best of all treatments.

Pneumonia: G. Wesley, in a consideration of the fatal factors in pneumonia, in the *Medical Record* for April 16, believes that much of the mortality in pneumonia is due to the failure to realize the importance of a few underlying principles. The body, by its phagocytes, its opsonins, and other means of defence will generally overcome the enemy if only given a good fighting chance, and a little active assistance when plainly indicated. The great needs of the body in pneumonia are exactly the same as in health, viz., air, water, food, and proper rest, only the need for some of these is greater than for others. It is altogether probable that the toxic substances generated by the pneumonia infection, like most other poisons and waste matter in the blood, are largely carried off by the kidneys. The good results secured by Delancy

Rochester in pneumonia, by his method of elimination through the skin, kidneys and bowels, are practical proof that the mortality can be reduced by stimulating the excretory organs. Personally, he depends upon the kidneys almost entirely to carry off the poison. Practically, we know that abundant urine is of good prognostic omen, scanty urine makes the outlook bad. Failure to give sufficient water may be set down as a not infrequent fatal factor in pneumonia. Air and water are absolute necessities for a man to win the fight, but a stomach too full may cause defeat. Simon Baruch has lost no uncomplicated case of pneumonia since adopting the plan of cold packs to the chest, rest, fresh air, cold water as a diuretic, and drugs limited almost entirely to calomel, strychnin, and morphin. Failure to keep the patient in the horizontal position continuously adds greatly to the mortality from pneumonia. The horizontal position is of aid as it saves the heart the work of elevating the blood to parts above its own level. Then, too, we know that the toxin of pneumonia has a special tendency to paralyze the vasomotor center in the medulla: hence the head should be kept low so that the important centers in the medulla may receive an adequate supply of blood. Rest is the principal thing in pneumonia aside from air and water, but if drugs are necessary to secure rest they certainly should be used. If a patient cannot lie still, on account of pleuritic pain, morphin may save life by enabling him to rest. The body will take care of the pneumococcus if we take care of the body. The great fatal factors in pneumonia are half enough water, half enough air, half enough rest, and too much meddlesome medication.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph.G., Ph.D.

Removing Iodoform Odor: According to F. Lafforge *(Bull. gen de Therap.,* through *Meyer Bros. Druggist 31,* 105) this disagreeable odor can be removed from the hands, after washing in soap and water, by rinsing with a little orange flower water.

Aromatic Chocolate Elixir: A new vehicle consisting of chocolate, sugar, aromatic oils and 12½% alcohol has been devised by W. L. Scoville and recommended by him for admission into the next edition of the National Formulary *(Bulletin of Pharmacy 24,* 174).

Pills of Potassium Iodid: M. Goevaerts *(Ann. de Pharmacie,* through *National Druggist, 40,* 171) after experiencing difficulty in making pills of this substance with ordinary excipients, hit upon the following plan which he finds very satisfactory.

For each pill containing 0.20 gm. (3 grains) of the salt, he uses starch 0.04 gm., powdered acacia 0.08 gm.; and calcined magnesia 0.10 gm.; massing with a liquid consisting of glycerin, 20 parts, syrup 50 parts, and alcohol 30 parts. He finds these pills readily disintegrate in water and are perfectly stable.

Soft Capsules: An article by L. Emanuel, Jr. *(American Druggist, 56,* 193) outlines the filling of soft (elastic) capsules by the retailer. He relates his experiments as to speed of solubility in artificial gastric juice as follows: fresh home-filled, dissolved in eight minutes; one month old home-filled, in 14 minutes; three months old, in 20 minutes; a year old, in three hours and 10 minutes; one manufactured capsule, in three hours and 55 minutes and another required 44 hours and five minutes.

He concludes his paper with the statement: "These results lead to but one conclusion and that is, that physicians should demand freshly prepared home-made capsules and should make it imperative upon pharmacists to furnish them."

Apocynum: While Dale and Laidlow *(Heart,* Vol. I, through *American Druggist, 56,* 165) find commercial apocynin (shown by Finnemore to be aceto-vanillone) inert, they report that Finnemore's cynotoxin, from *Apocynum cannabinum,* acts on the heart like the digitalis series and that without cumulative action. Physiologically identical with cynotoxin, is apocyamarin, isolated by Moore from *Apocynum androsaemifolium.*

Enzymes of Ergot: Quickly dried ergot keeps better than that slowly desiccated. The decomposition of the latter is due to enzymes. One of these isolated from fresh ergot, hydrolysed starch to maltose, glucose and dextrin, while the presence of a second enzyme which decomposes fats seems shown by the fact that while the diastasic enzyme just described and a defatted ergot do not make oils rancid, that containing fat does. *(American Druggist, 56,* 166).

Chlorinated Soda Solution: Noting the unsatisfactory character of the present U. S. P. method of making Labarraque's solution; first because of the variability of strength and instability of commercial chlorinated lime from which it is made, and secondly because of loss of chlorin during the process of manufacture, Elias Elvove *(American Journal of Pharmacy, 82,* 160) suggests utilization of the Graebe process of making chlorin (hydrochloric acid plus potassium permanganate) and passing the gas into a solution of sodium hydroxid.

Elvove's recipe calls for 10 gms. solid potassium permanganate in a pint flask fitted wtih separatory funnel, and gas delivery tube connected with wash bottle, which in turn is connected with a bottle holding about 50 gm. sodium hydroxid dissolved in about 420 c. c. water: 175 c. c. 33% hydrochloric acid is put into the separatory funnel from which it trickles upon the permanganate. The chlorin is evolved without extra heat but when all the acid is added, gentle heat is applied to drive off the last portion of the gas. The resulting Labarraque's solution was found to contain 5.8% chlorin instead of 2.4% chlorin directed for the official solution of chlorinated soda, which seldom attains even the official strength.

Dangerous Bismuth Subnitrate: The present French Codex directs a subnitrate containing 20.7% of nitric acid. This, according to the *Gazette Medicale de Paris* (through *Chemical Abstracts 4,* 949), is a source of danger producing a form of intoxication through formation of nitrites in the intestine. Far safer is the subnitrate of the Codex of 1884 which contained 17.43% of nitric acid, and best of all is a subnitrate made by washing the commercial subnitrate with boiling water until the filtrate no longer effervesces with sodium carbonate and which contains only 4.3% nitric acid.

Commercial Diuretins: An examination by A. Patta *(Arch. farm. Sper.,* through *Chemical Abstracts, 4,* 950) of the theobromin sodium salicylate made by different factories shows marked variation in theobromin content; which should be 40%. The products of four firms came up to this standard, but 10 other samples from other sources contained from 14.65% to 32.02% theobromin and six of the samples contained free salicylic acid.

Caramelization in the Rivas Test: While the paper by D. W. Horn *(American Journal of Pharmacy, 82,* 151) is primarily a discussion of the darkening which occurs on heating glucose broths with sodium hydroxid in Rivas' Test for *Bacterium coli,* it is of pharmaceutical interest in explaining the darkening of syrup of ferrous iodid and of syrup of hydriodic acid. It has long been known that the blackening of these liquids is not entirely due to liberation of iodin, as was originally supposed, since the darkened syrups give no reaction for free iodin. Hausmann has attempted to explain the darkening as caramelization, even as others have explained the darkening in Rivas' test but this idea seems controverted by the fact that frequently boiling of such darkened liquids causes a vanishing of the brown color. Horn believes that the darkening is due to formation of brown decomposition substances from the alcohol-aldehyd, sugar, similar to the "humus substances" of Hollermann and the "aldehyd resins" obtained by warming acetaldehyd with sodium hydroxid.

Integral Extract of Digitalis: Nuvellas *(Gaz. farm. Espanola,* through *Chemical Abstracts, 4,* 950) reports that an extract representing the entire virtue of the drug can be made by extracting the drug successively with 95% alcohol, chloroform and water. The chloroform percolate is mixed with glycerin, is then evaporated at 35° C. and finally mixed with the alcoholic and aqueous extracts.

Academy of Medicine of Cleveland.

OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION

The forty-sixth regular meeting was held at the Cleveland Medical Library, Friday, March 25, 1910, E. Lauder in the chair.

The meeting was devoted to a discussion of tonsil operations in general, but with special reference to the frequency of severe hemorrhages and the methods used to control them.

W. J. Abbott reported several cases occurring during his service at Lakeside Hospital. In some cases the bleeding was controlled by sewing the pillars together; in others the bleeding point was caught up in a suture and tied. In some cases the bleeding occurred after the patient had gone home.

L. W. Childs reported treating a case which had been operated on in a near-by city. Bleeding kept recurring for some time until the patient was brought to Cleveland in an exsanguinated condition. He thought Monsell's solution was of material help in ultimately checking the hemorrhage.

S. H. Large reported cases and showed an instrument for catching the bleeding point. This clamp he had found very useful in controlling the hemorrhage after enucleation of the tonsils.

M. Metzenbaum suggested that the metallic sutures used to close skin incisions, with a string attached to prevent their falling into the larynx, might be of service.

H. B. Ormsby reported a very severe case of hemorrhage and related the difficulty in applying a suture in a deep cavity obscured by blood.

M. D. Stevenson, of Akron, reported cases of hemorrhage and showed an instrument for catching the bleeding point.

T. A. Burke opened the discussion on the ways and means of doing tonsil operations.

W. B. Chamberlin emphasized the fact that enucleation of the tonsil was a difficult operation and that so many men who were attempting to do it, without having had sufficient training in its technic, would bring it into disfavor from the poor results attained. He laid stress upon the fact that it was a hospital operation and should be considered as such, and be followed by rest for two or three days in bed. He reported several cases with severe hemorrhages and pointed out that general oozing almost never occurred but that the bleeding was arterial, from deeper in. The hidden bleeding point should be sought and tied as in any other surgical procedure.

The consensus of opinion seemed to be that hemorrhage was more frequent after total enucleation than when the tonsillotome was used, but that the results were better and that enucleation properly done was a much more formidable operation.

CLINICAL AND PATHOLOGICAL SECTION.

The sixty-eighth regular meeting was held at the Cleveland Medical Library, April 1, 1910, J. S. Tierney in the chair.

W. G. Stern exhibited a plaster cast and radiograph of a case of Madelung's deformity. This was due to a marked flexion of the carpus and extension of the metacarpus upon the carpus, together with a contricture of the flexor tendons. The deformity somewhat resembled that found in a Colles' fracture although there should be no difficulty in differentiating the two conditions. The etiology was unknown but the cases he had seen had been usually in laborers using shovels or in bakers who used their wrists a great deal. He did not think the condition so rare as was usually supposed; he had seen several instances in the past few years.

H. B. Ormsby asked whether the deformity could be corrected under anesthesia and then cured by maintaining the position by means of a plaster cast.

C. A. Hamann said that Madelung had regarded this condition as an "occupation deformity," occuring especially in young factory girls. He himself had always considered it a rare condition and had encountered only one case of it. He had recently seen an unusual deformity, cubitus valgus, in which the forearm was markedly abducted, somewhat like knock-knee in the lower extremity, and like it disappearing on flexion of the joint. Malgaigne, who first described this deformity, ascribed it to relaxation of the ligaments. It occurred most often in women.

W. G. Stern, in conclusion, said that he did not mean to infer that the condition was common but that its frequency seemed to be increasing. He had seen, he believed, twice as many instances of it as of wry neck. The deformity could not be reduced under anesthesia on account of the permanent shortening of the flexor muscles and tendons.

J. Phillips reported the case and showed a photograph of a man aged 58 with a large epigastric hernia. He had had it since the age of 20; at first it was quite small but increased in size until it was five inches in diameter at the base and projected five inches from the surface. It was situated in the median line, was irreducible and there was no gurgling on palpation. Epigastric herniae were not very uncommon. They might occur either in men or women but they were most frequent in children, associated with a divarication of the muscles. They usually caused pain due to the traction which the incarcerated omentum exercised upon the bowel. Large herniae in the median line were usually found below the umbilicus. During the past six months he had seen six cases of epigastric hernia in the medical dispensary at Lakeside Hospital. They had been discovered in the course of routine physical examinations; all were of small size and all the patients complained of digestive disturbances.

F. E. Bunts said that this was the largest epigastric hernia he had seen pictured. One the size of a walnut would be considered of good size. The omental tissue in the sac of these herniae was often separated from the main body of the omentum and then resembled a small lipoma; but if it were not so separated the herniae were very apt to cause pain and marked disturbance of digestion from interference with the mobility of the stomach and bowel.

The program was as follows:

1. Exophoria, with Some References to its Causes, Reflex Disturbances and Treatment, Edward Lauder. (To appear in full in the Journal.)

C. C. Stuart said that exophoria would often defeat the oculist's efforts at refraction. It was common among myopes and the combination of the two conditions rendered it very difficult to obtain satisfactory results.

E. Lauder in conclusion said he had purposely omitted many aspects of the question. These cases were particularly apt to require prolonged efforts in correcting the trouble.

2. Exostoses of the Os Calcis, G. I. Bauman. (Appearing in full on page 356.)

W. G. Stern said that one stumbling block in the relief of patients with such spurs was that in the opinion of many medical men they were more or less normal conditions: spurs that caused no symptoms might possibly be so considered but if they caused pain they were pathological and required treatment. Gonorrhea was responsible for many of them and their presence often gave corroborative evidence of a suspected gonorrhea even when the patient denied the history of such an infection. The long continued suffering from this condition was very apt to make the patient neurotic. Permanent relief was usually obtained only after the removal of the spur with a chisel.

R. H. Birge said he had reported seven or eight cases before the Academy about a year ago and had seen several since. Many cases were treated for flatfoot without relief and the true condition could easily be overlooked unless radiographed. In one of his cases he removed a spur from the os calcis and perfect relief of pain in the heel resulted; later, however, pain developed in the tarsophalangeal joint although no complaint of this had been made previously. On referring to the original radiograph a spur was found in this location and when this had been removed a complete cure was obtained. There had been a positive history of gonorrhea in all of his cases but no gonococci could be obtained from the spurs on culture. Baer, however, had obtained positive cultures in about half of his cases.

3. Some Experiences in the Treatment of Various Forms of Hernia, C. A. Hamann. (To appear in full in the Journal.)

R. E. Skeel said that in looking up the literature upon hernia of the bladder he found that after the publication of one particular article recording several instances, a great many other similar reports appeared. He had found the bladder in the hernial sac several times; in one of these an ovary was also in the sac. Recently he had operated upon a child who had a strangulated ovary in the sac. He had been rather impressed with Ochsner's plan of operation for femoral hernia but after trying it a few times he found too many recurrences for it to be satisfactory. One could expect but 85% of cures in femoral hernia whatever operation was done. He had had no known recurrence after operations upon inguinal hernia in which no strangulation existed and in which the formal radical operation had been done. He preferred the Ferguson to the Bassini operation as there was less danger of orchitis from it.

J. E. Tuckerman asked how frequently hernia containing the bladder alone occurred. It was always advisable to inquire before the operation as to any difficulty in emptying the bladder

C. A. Hamann, in conclusion, said that in operating for strangulated femoral hernia the canal should not be enlarged more than was necessary to reduce the gut. He narrowed the ring as much as possible by suturing Poupart's ligament down to the pectineal fascia and muscle and to the periosteum. He did not like a purse-string suture as there was danger of injuring the femoral vessels. He had known of one instance in which both the femoral artery and vein had been accidentally cut in the operation. A hernia of the whole bladder must be very rare; usually only a diverticulum from one side occupied the sac. Such a diverticulum of the bladder could usually be recognized from the amount of muscular tissue in it.

EXPERIMENTAL MEDICINE SECTION.

The forty-ninth meeting was held at the Cleveland Medical Library Friday, April 8, 1910, W. B. Laffer in the chair.

The program was as follows:

1. Senescence and Natural Death, W. T. Howard. (To appear in full in the Journal.)

O. T. Schultz, in the discussion, agreed with the speaker's view that in senescence there was a wearing out of the highly organized noble cells and a replacement of them by the stroma cells, rather than that the latter actively destroyed the former. The views of Hertwig and others appeared to be more in accord with the facts than did those of Metchnikoff. In addition to the exhaustion of the energy of the cell by continued function and to the loss of balance between ferments and antiferments another factor had to be considered as a cause of depression and senescence, viz., the possibility of a slow destruction of the cell by the gradual accumulation of the waste products of cellular activity. Popoff had investigated this subject experimentally by observations upon the depression of protozoa and had found that by bringing them in contact with very dilute solutions of certain chemical substances, such as might be formed in metabolism, e. g., ammonium and other nitrogenous compounds and carbon dioxid, the protozoan cells would be thrown into depression much more rapidly than would occur if they were left to themselves.

J. J. R. McLeod said that Benjamin Moore of Liverpool had attempted to show that a special form of energy which he termed "biotic energy," existed in the cells and that such a force must be assumed in order to explain the chemical processes of the cells. His hypothesis, however, had been very generally disputed and very few now believed that the assumption of the existence of a special biotic energy was of any value. The question as to how nutritive balance was affected by the proportion between ferments and antiferments in the cell seemed an important one. There was a possibility that some self-regulating mechanism controlled this, that the vital activity or biotic energy of the cells maintained this balance. Senescence, therefore, might possibly represent an upset of this balance. Ferments and antiferments have been shown by recent work to be extremely susceptible to certain influences which might cause the reversal of their usual processes. This might explain the supposedly large number of ferments; in reality there might be very few having very varied actions. He had been much interested to hear that the sex cells retained their normal relations when the somatic cells had apparently been largely used up.

2. A Preliminary Report of the Influence Upon Gastric Secretions from Lesions Surrounding the Stomach, Based upon Clinical and Experimental Study, M. J. Lichty. (To appear in full in the Journal.)

R. K. Updegraff said that the preparation of such a paper by men in general practise represented a great sacrifice of time and was, therefore, deserving of great commendation. The results obtained threw some light upon the limitations to the information usually derived from gastric analyses. He thought the stomach tube was not used sufficiently in diagnosis and the results obtained were not sufficiently recorded. He wished to ask whether, in the two patients referred to, the lesions adjacent to the stomach had caused pain or other symptoms, or whether operation had been demanded solely on account of hyperacidity. It impressed the general practitioner that gastric analyses were the least dependable and accurate of all clinical diagnostic methods and this might explain their being neglected. Lumbar puncture was also neglected, but the results from it were more conclusive than those from gastric analyses.

M. Rosewater said that formerly he had used three tests at intervals of an hour in making gastric analyses but he soon found that, as a routine measure, it was not worth the effort and he then used Ewald's test meal. Even this he now used far less often as he found the results varied so greatly, even in the same patient. Symptoms that were apparently due to pathological conditions of the stomach were often found due to outside conditions, such as enteroptosis, systemic and reflex conditions, adhesions, etc. The rational procedure was, therefore, to deal with these outside conditions, apparently causing the symptoms, first and when this was done stomach symptoms would often disappear. It had been found by Pawlow that mechanical irritation of the dog's stomach did not influence the secretion of gastric juice and was probably much less likely to produce alteration in the gastric juice than continuous irritation of the gall-bladder, which clinically often seemed to cause marked stomach disturbance and then again, in a contrary manner, in some of these cases there was marked absence of localizing symptoms suggesting gall-bladder irritation. Hyperacidity seemed to be an especially common result of peripheral irritation both of psychic origin and also of irritation in the abdomen, yet it was pretty well established that the gastric secretions did not furnish diagnostic evidence of extragastric irritation of any positive value; the results of the investigation which had just been presented seemed to emphasize this fact.

M. J. Lichty, in conclusion, said that the two patients to whom he had referred, had complained of distress after meals, sour stomach and acid eructations, but neither had had gall-bladder colic. One had had tenderness in the right hypochondrium, a symptom suggestive of a number of lesions besides gall-bladder disease, and yet both of these patients had nothing but gall-stones. Many patients with lesions surrounding the stomach presented none but stomach symptoms. He did not wish to advance this as a new diagnostic sign but merely to draw attention to the influence of outside conditions producing symptoms apparently originating in the stomach alone. The value of gastric analyses was largely a matter of opinion. Personally he did not consider the examination of a patient presenting abdominal symptoms complete without gastric analysis. He believed an earlier and surer diagnosis could be made if the stomach tube were used earlier. In a patient presenting abdominal symptoms and not doing well an examination of the stomach contents would throw light on the true condition of affairs.

ACADEMY MEETING.

The seventy-fifth regular meeting was held at the Cleveland Medical Library, Friday, April 15, 1910, the President, C. B. Parker, in the chair.

The program was as follows:

1. A Plea for Routine Otoscopy in Febrile Infections of Infancy and Childhood, A. S. Maschke. (To appear in full in the Journal.)

W. B. Chamberlin said that in the past year there had been an unusual prevalence of grippe and many resulting cases of otitis media. It was truly surprising how quickly these cases responded to paracentesis. When drainage was established the symptoms very rapidly subsided. If the drum membrane were simply reddened the inflammation might, of course, subside, but when in doubt it was wise to do a paracentesis. It could do no harm and if it were delayed until pus had formed, the drum might have become necrotic and considerable damage have been already done to the hearing. The opinion seemed to be prevalent that a valuable diagnostic sign of otitis media was the child's raising the hand to the affected ear. This was constantly stated in textbooks but he thought it occurred very rarely.

S. H. Large said that attention should be drawn to the danger of using watery solutions for acute rhinitis in children, the struggles of the child might easily force some of the fluid through the Eustachian tube and lead to otitis media. He also believed in early paracentesis, the operation itself could do no harm.

J. M. Ingersoll said that it was extremely gratifying to otologists to hear such a paper from a man doing general work. It was remarkable that in many of these cases of inflammation of the ear there was comparatively little or no pain. Otoscopy in infants was not easy, but it could be done satisfactorily by any one who would take time to learn how to use a head mirror and reflected light. In order that good drainage might be secured, it was advisable to make a free incision through at least one quadrant of the drum membrane, usually the posterior inferior quadrant. A simple puncture would not make an opening large enough for free drainage. Neumann of Vienna, who had recently been here in Cleveland, emphasized the fact that if pus immediately followed an incision in the drum membrane the operation had really been performed too late to secure all the favorable results which one could reasonably expect. If the incision were made early before there was an accumulation of much secretion in the ear only a few drops of serum might drain through but the outlook for a speedy recovery was very much better and the probability of complication, such as an infection of the mastoid or even of the brain, was much less. The prognosis as to hearing was also decidedly better. He heartily endorsed all the points brought out in the paper.

W. O. Osborn had recently seen a child with otitis media who constantly raised the hand to the affected ear. The drum was red and bulging in Shrapnell's area and only the tip of the short process of the malleus could be seen. Within 24 hours the reddening was less and the outline of the long process of the malleus could be seen. The case went on to recovery without puncture or rupture of the drum. In another case with temperature of 104°, running nose, reddened drum, etc. the symptoms subsided spontaneously within 24 hours and there had been no return of the symptoms one month later.

J. J. Thomas said that as a general practitioner he heartily agreed with the speaker. In one of his cases, with symptoms which the mother and a trained nurse, in the house at the time, diagnosed as colic, the trouble was really in the ears and on incising the bulging drum complete relief followed. Very obscure symptoms could result from otitis media, *e. g.*, prostration unaccompanied with fever. With children the possibility of ear lesions should always be considered. He too believed the child often failed to put the hand to the ear, in fact he could not recollect ever having seen it done.

A. S. Maschke, in conclusion, said that as a result of his experience during the past winter he was an advocate of early paracentesis. He had tried to separate his cases into those needing and those not needing paracentesis, using the severity of the symptoms as a guide, but he had found it very difficult to do so. In consultation with otologists he found that at times the otologist would consider the operation indicated when he would not and vice versa.

2. Intestinal Infections in Children; Etiology, Natural History, Treatment and Feeding, Jos. E. Winters, Professor of Pediatrics, Cornell University.

H. H. Powell said the whole subject of infant feeding in digestive disorders was in a most chaotic condition. There was nothing upon which a greater diversity of opinion existed among experts. A great deal of his own work had been along this line and he had endeavored to learn from the authorities and his own experience but had never been able to sum up any such conclusive plan of procedure as had just been presented. The great lack of unanimity of opinion suggested that we must be very much behindhand in our knowledge of this subject. The results, however, of men who adopted one plan of feeding compared favorably with those of others who used a diametrically opposite plan. The personal equation of each individual baby had to be taken into account and the personal equation of the physician himself had also to be considered. An ideal plan of treatment had been presented in the paper although the difficulties of its accomplishment had not been entered into. It had been clearly indicated, however, that the plan was much too costly for any but the well-to-do, demanding, as it often did, several quart bottles of certified milk for a single baby, in order to supply sufficient top milk.

J. Hulse, of Akron, had recently changed the diet of five healthy children from Jersey milk, containing over 5% of fat, to certified milk containing much less fat: each of the five children immediately sickened but recovered when the Jersey milk was again given. This experience tended to show the value of the fat. He believed perfectly fresh milk only should be used, it was preferable to older milk even if the latter had been kept perfectly cold.

R. A. Bolt said that with the first part of the paper he was heartily in accord, but with the latter part, dealing with the practical feeding, he took exception. Anyone who had tried to comprehend the confused classification of the gastro-intestinal diseases in infancy must welcome any attempt to simplify the nomenclature. A very satisfactory classification had been proposed by Czerny who regarded the intestinal disturbances due to either a constitutional fat disturbance or to some faulty carbohydrate metabolism, but he laid practically no stress on the rôle of proteids in producing these diseases. Such men as Finkelstein, Keller and Feer had spent a great deal of time investigating these metabolic changes, and their relation to infant's food. They practically agreed that much of the diarrhea and concomitant disturbance was largely due to overfeeding, primarily with the fats. The so-called "casein curds" had been found to contain a large percent of fats, in some instances as much as 60 to 70%. Cutting down the fats and giving fewer feedings would accomplish results in a number of those cases of summer diarrheas formerly considered infectious. Many of these were really what Finkelstein described as an "intoxication."

While a student at the Boston Children's Hospital he saw a great many of these cases of summer diarrhea. At that time Rotch and Ladd were splitting up the proteids and trying to adjust the feeding at one end, while Dunn was earnestly searching for intestinal infection at the other. Since working at the Babies' Dispensary here he had seen many similar cases cured by castor oil, with starvation diet for 24 to 36 hours, followed by simple milk dilutions given at four-hour intervals. In regard to certified milk, he had read the paper by the previous speaker, J. Hulse, of Akron, in the Journal of the A. M. A. but his statements regarding certified milk certainly did not apply to Cleveland. Just last week he had the privilege of inspecting the Canfield Certified Milk Farm at Novelty, O. He did not see how much more care could be used in producing a clean, tuberculosis-free milk. Every detail of management was carried out with precision. He could add his personal testimony as to the keeping qualities, when he stated that his wife has just telegraphed that some milk, put up five days ago, reached California "perfectly sweet." He had never seen any serious trouble in babies fed on properly modified certified milk.

A. S. Maschke asked how, with poor families, the speaker managed to provide such a quantity of milk, only a small part of which was to be used for the infant.

J. J. Thomas regretted that in the paper no classification of the summer diarrheas had been given. The German authorities were practically agreed that these diarrheas were due neither to toxins nor bacteria. Vaughn, alone, claimed to have demonstrated toxins in milk and Czerny had pointed out that this occurred only in ice cream and not in milk. All the symptoms of summer diarrhea and ileocolitis in infants could be produced by the irritation of fatty acids set free by bacterial action on the fat, and a diet of washed casein had been found very effective in such cases. He considered the large quantity of milk required for such a plan as the speaker had outlined, a very serious objection, especially among poor families.

J. H. Lowman asked a further explanation of what was meant by the "physical behaviour" of the top milk and how it was estimated; and also whether the top half ounce of one quart of milk would show a different "physical behaviour" from the top two ounces of a quart of similar milk.

Prof. Winters, in conclusion, said that his methods of investigation had been somewhat different from those of other observers. His remarks upon diarrhea in infancy and feeding represented what he had learned from the babies themselves, by constant observation of them and by careful record of every formula used for feeding, with the results obtained. The tabulation of his results indicated the most satisfactory formulae and he then had a competent chemist estimate the exact percentage composition of them and determine their behavior when acted upon by heat and dilute acetic acid. When a sample of mother's milk and a sample of the top half ounce from a quart of milk, diluted as directed, were so treated they could not be differentiated, each showed a light, feathery, flocculent precipitate which did not sink to the bottom. On the other hand, whole milk or skim milk when so treated gave a firm leathery curd which must obstruct the very narrow pylorus of the infant's stomach and cause gastric disturbances. His experience had been gained almost entirely in dispensary work, since in New York in the summer these children were about the only ones left in the city. When the family was poor and the top of several quarts of milk was required he had the mother arrange with the neighbors to take the remainder of the milk so that it was not wasted.

The statement that the curds in the infant's stools consisted really of fat had been disputed by Southworth who reported at a meeting of the American Pediatric Society his results from the careful analysis of such curds in 90 cases: he found that in all these the curd consisted of casein and not of fat.

In order that milk be suitable for the infant's stomach there should be a definite proportion between the fat and the proteid. He believed the use of fat-free food such as skim milk was absolutely absurd. Many physicians in New York who formerly had used it were now using higher percentages of fat.

Book Reviews.

The Optic Nerve and the Accessory Sinuses of the Nose. A Contribution to the Study of Canalicular Neuritis and Atrophy of the Optic Nerve of Nasal Origin. By Prof. A. Onodi, University, Budapest. Member of the Hungarian Academy of Sciences; Honorary Member of the American Laryngological, Rhinological and Otological Society, and of the Italian Society for Diseases of the Ear, Nose and Larynx, etc., etc. Authorized translation by J. Luckhoff, M. D. Edin., Ch. B. Cape Town, with 50 illustrations. New York. William Wood & Company. 1910.

The first half or more of the book is devoted to the topographical anatomy of the sinuses and is replete with many excellent illustrations reproduced from photographs of actual specimens and beautifully executed, showing most graphically the varying relations between the different sinuses and the optic nerves. These drawings in fact constitute the most valuable feature of the book. Very frequently in this portion of the volume the author describes in detail figures or drawings which are in his atlas but do not appear here. Either such illustrations should have been included in the book if they are needed to render it complete or else the detailed references to them should have been omitted from the text and if he wanted them in the book at all should have been placed in foot notes. It is most annoying as you read along to find that a description is about a figure which is not in the book but in his atlas.

The second part of the book is devoted to clinical considerations and is very interesting and instructive. He concludes his observations by saying that "we may take it as firmly established that accessory sinus disease both ethmoidal and sphenoidal may cause visual disturbance or blindness on one or both sides or disease of the optic nerve on the opposite side. And though our pathologic knowledge is not complete the anatomical relations that may be present suffice to explain every clinical finding." Retrobulbar neuritis as a result of nasal or sinus conditions is dwelt upon, also paralysis of the ocular muscles. "As regards the clinical diagnosis of a case of visual disturbance that may be associated with accessory sinus disease, two facts must be borne in mind. The fundus of an eye may appear normal and yet a serious visual defect be present or the field of vision be altered and scotomata be present. Again, the nasal cavities may appear normal or but slightly altered in appearance while suppuration is nevertheless present in one or more sinuses. Also notwithstanding good vision hyperemia and some swelling of the optic disk may be present." We should bear in mind the possibility "that an optic lesion may be due to accessory sinus disease and yet the accessory sinus disease produce no visible intranasal suppuration. Such latent empyemata can be revealed only by operative exploration."

The monograph constitutes a valuable contribution to this important subject and should be familiar to every ophthalmologist and rhinologist.

W. E. B.

Esquisses Cliniques de Physicothérapie, Traitement Rationnel des Maladies Chroniques. Par le Dr J. A. Rivière, Chevalier de la dégion d' Honneur, etc., Paris, 1910. Bouchy et Cie.

The work is a compendium of the author's method of physical therapy. It deals chiefly with the treatment of chronic affections. The first part of the book takes up the treatment from the point of view of the different methods and there are chapters on physical therapy, electrotherapy, atmotherapy, various kinds of baths, etc. The latter part of the book takes up the subject from the point of view of the various chronic diseases, there being chapters on arthritis, neurasthenia, obesity, arteriosclerosis, digestive disturbances, etc. There are a number of halftone illustrations at the end, showing certain apparatus used. H. O. F.

New and Nonofficial Remedies, 1910: Containing descriptions of articles which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association, prior to Jan. 1, 1910. Price: paper, 25 cents; cloth, 50 cents. Pp. 256. Press of the A. M. A., Chicago.

This book, which it is proposed to issue annually, is an extremely useful reference book for any physician to have at hand. It contains the medicinal substances which, prior to January 1, 1910, have been examined by the Council on Pharmacy and Chemistry of the American Medical Association, which appeared to comply with the rules of the Council and which therefore were accepted for inclusion in the annual New and Nonofficial Remedies. The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that so far as known it complies with the rules adopted by the Council. It furnishes the only authoritative information to a physician who is desirous of knowing something of the worth of the numerous new products which are continually brought to his attention.

R. H. B.

Pocket Therapeutics and Dose-Book. By Morse Stewart, Jr. B. A., M. D. Fourth edition, rewritten. Small 32 mo. of 263 pages. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $1.00 net.

This little book includes a classification and explanation of the actions of medicines; doses in troy weight with metric equivalents; index of diseases with remedies; tables of solubilities; examples of prescription writing; poisons, their symptoms, antidotes and treatment; incompatibilities, etc. Its principal recommendation lies in its small and convenient size and the practical nature of the contents. The more essential items can often be found, however, incorporated in various "visiting lists"

which thus serve a twofold purpose. That there must be a considerable demand for a work of this character is indicated by this being the fourth edition.
W. B. C.

The Propaganda for Reform in Proprietary Medicines; sixth edition: Containing the various exposes of nostrums and quackery which have appeared in *The Journal of the American Medical Association.* Price, Paper, 10 cents; cloth, 35 cents. Pp. 292. Illustrated.

This consists of a series of reprinted articles that have appeared in the last few years in the *Journal A. M. A.* and that deal with various proprietary articles investigated, but not approved, by the Council on Pharmacy and Chemistry. The book also contains reports, from different sources, upon various well known nostrums. Both this and its companion work, New and Nonofficial Remedies, should be in the hands of every practitioner as together they furnish the only available satisfactory classification of the "sheep from the goats." We should like to see the scope of this little work greatly extended. There is no other source of information as to the composition of nostrums which we may find our patients taking and the dangers or uselessness of which we can point out with much greater effect if we are aware of their ingredients.
W. H. W.

High Frequency Electric Currents in Medicine and Dentistry. Their Nature and Actions and Simplified Uses in External Treatments by S. H. Monell, M. D., New York. Finely illustrated with special instruction plates. Wm. R. Jenkins Co., New York.

The author has attempted to disarm criticism by prefacing his work with a fable concerning a musician who goes to sleep in the forest with his violin lying beside him. Various wild animals approach and after inspecting, and in some instances touching, the violin, venture to express their opinion as to how effective such an instrument might be for the production of music. There are very few men who are in a position to express an authoritative opinion upon the value of high frequency currents in the treatment of disease. A general knowledge of medicine and the behaviour of certain conditions under various other forms of treatment suggest, after a careful perusal of this work, that the enthusiasm of the author has somewhat carried him away and led him to make assertions which, to say the least, would be difficult to prove. He advises this form of treatment in practically all ills to which flesh is is heir, and he ascribes the cure, in certain reported cases, to high frequency currents and fails to give the consideration to the *vis medicatrix naturae* and other factors concerned. Whatever the final judgment may be as to the value of this form of treatment, there is no doubt that in certain conditions, such as some cutaneous lesions, they are of undoubted value. For a full and satisfactory discussion of the application of this form of therapy, illustrated with reports of many clinical cases, the work is most thorough and comprehensive.
T. J. T.

Acknowledgments.

The Sexual Life of Woman in its Physiological, Pathological and Hygienic Aspects. By E. Heinrich Kisch, M. D., Professor of the German Medical Faculty of the University of Prague; Physician to the Hospital and Spa of Marienbad; Member of the Board of Health, etc. Only authorized translation into the English language from the German by M. Eden Paul, M. D. With 97 illustrations in the text. Price, cloth $5.00. Rebman Co., New York.

Diseases of the Stomach and Intestines. By Robert Coleman Kemp, M. D., Professor of Gastro-intestinal Diseases, New York School of Clinical Medicine. Octavo of 766 pages, with 279 illustrations. W. B.

Saunders Co., Philadelphia and London, 1910. Cloth, $6.00 net; half morocco, $7.50 net.

Anatomy and Physiology for Nurses. By LeRoy Lewis, M. D., Surgeon to and Lecturer on Anatomy and Physiology for Nurses at the Lewis Hospital, Bay City, Michigan. Second revised edition. 12 mo. of 344 pages, with 161 illustrations. Philadelphia and London: W. B. Saunders Co., 1910. Cloth, $1.75 net.

Public Health and Marine-Hospital Service of the United States. What the Local Health Officer can Do in the Prevention of Typhoid Fever, by L. L. Lumsden, Past Assistant Surgeon, United States Public Health and Marine-Hospital Service. The Rat and its Relation to the Public Health, by various authors. Prepared by direction of the Surgeon-General.

Medical News.

Walter C. Hill and George F. Thomas have united their X-ray laboratories and will be associated in the practise of Roentgen diagnosis and therapy at Suite 533 Osborn Bldg.

George D. Upson and Walter H. Rieger have removed their offices to 408 Electric Bldg.

Prof. A. von Eiselsberg of Vienna was the guest of W. H. Humiston last month.

H. C. Luck is spending a month at the New York Postgraduate Hospital.

D. A. Prendergast has returned from postgraduate work in Vienna.

E. O. Houck has been appointed a member of the visiting staff of the City Hospital.

Thos. J. Taylor has opened an office in the Kingmoore building, 1110 Euclid avenue, and will specialize in radiographic work.

A Consolidation of the Cleveland College of Physicians and Surgeons with the Medical Department of Western Reserve University will probably be effected in the near future.

The Charity Hospital Medical Society met Wednesday, April 13, at Charity Hospital. A. N. Dawson presented a case of chronic tetanus presumably following infection from a carious tooth. The patient also had wide spread molluscum fibrosum. R. J. Ochsner presented a case of transverse myelitis of probable luetic organ. J. S. Tierney demonstrated the case and opened the discussion. E. O. Houck read a paper on "Treatment of Inflammatory Conditions of the Adnexa. The rest of the evening was devoted to a general discussion of goiter. David Marine gave a very clear presentation of the pathological side and J. P. Sawyer spoke of the clinical features. R. A. Bolt showed photographs of a marked case of exophthalmic goiter, and one of myxedema seen in Charity Hospital.

The Faculty of the Medical Department of Western Reserve University, at a meeting on April 20, unanimously adopted the following resolutions:

Whereas, the Ruler of All Things, in His wisdom, has seen fit to remove from this life, our honored colleague and friend Dr Henry Kirk Cushing, be it

Resolved, that we, the faculty of the Medical Department of Western Reserve University, deeply feel the loss of one who has always been an honor to the college; who by his ability as a teacher, his wisdom as a trustee and his untiring efforts for the advancement of its best interest, has aided materially in placing this college in the enviable position it now enjoys among the medical colleges of this country;

Resoved, that we extend our sincere sympathy to the family of the deceased;

Resolved, that these resolutions be published in the Cleveland Medical Journal and a copy sent to the family.

The Lakeside Hospital Medical Society held its forty-seventh meeting Wednesday, April 27, 1910. The program was as follows: 1. Presentation of a Case of Mesenteric Cyst, C. E. Briggs. 2. Presentation of a Case of General Anasarca, J. Wyatt. 3. Presentation of a Case with Severe Hematemesis, G. Boyer. 4. Presentation of a Case of Hemiplegia, C. W. Stone. 5. Presentation of a Case of Unusual Syphilide, H. N. Cole. 6. Presentation of a Case of Laceration of the Bladder, H. L. Becker. 7. Presentation of a Case of Syphilitic Periostitis, C. F. Hoover. 8. Presentation of a Case with Cystic Tumor, J. MacLachlan. 9. Presentation of Pathological Specimens, A. L. Ellis.

The Academy of Medicine of Toledo and Lucas County Meetings: The Section on Surgery met Friday, March 25, 1910. The program was as follows: 1. Mixed Anesthesia, Howard L. Green; discussion opened by C. G. Souder. 2. A Study of Blood-Pressure in Anesthesia, E. I. McKesson; discussion opened by C. E. Price.

The Medical Section met April 15, 1910. The program was as follows: 1. The Treatment of Pleurisy with Effusion, W. A. Dickey; discussion opened by B. Becker. 2. The Role of Calcium in Tuberculosis, John North; discussion opened by L. A. Levison and J. L. Tracy.

The General Meeting of the Academy was held Friday, April 1, 1910. The program consisted of an address upon Irregularities of the Heart by J. D. Greiwe, Cincinnati, O. The discussion was opened by L. C. Grosh.

The Pathological Section met April 8, 1910. The program was as follows: 1. Cystic Degeneration of the Kidney, J. Todd Duncan. 2. The Biology of Pneumonia (Analytical), J. L. Tracy; discussion opened by L. A. Levison.

The Toledo Hospital, through the gratitude of Emma B. Hitchcock, deceased, of the village of Temperance, Michigan, has been given the sum of $2,782.35.

The present epidemic of measles in Toledo has proved to be the worst that city has ever had, the total number of cases reported for the months of January, February and March being little short of the total number reported for the 12 months of 1897, the highest previous record.

The need of a tuberculosis hospital in Lucas County is emphasized by the fact, brought out by the recently published report of Infirmary Director Evans, that each week one person dies of tuberculosis in the infirmary hospital.

The Thalians, a benevolent association of Toledo young women, has completed arrangements for the care of 10 tuberculous poor in an outdoor camp at Ottawa Park. It is the intention to enlarge this camp as the funds become available.

I. E. Hunter, Toledo, is spending three months in the Eastern clinics, preparing for special work in children's diseases.

Justin Rose, formerly of Cleveland and recently of Toledo, has gone to Paris. Having been deprived of his license by a recent action of the State Board of Registration, he no longer finds his Toledo residence remunerative.

J. J. Boone, of Mt. Victory, recently found guilty of violating the State law which compels registration of births and deaths, has carried his case to the Circuit Court.

The District Nurses' Association, of Toledo, will inaugurate, April 28, a campaign to raise $20,000.

Charles W. Moots, Toledo, announces his intention to limit his practise to surgery and gynecology.

At the State Meeting in Toledo, Dan Millikin will present to the physicians and their wives, on the first evening of the meeting, a playlet of his own creation entitled "What Would Mrs. McThinker Say?" This is one of a number of delightful, refreshing entertainments that the Academy of Medicine of Toledo and Lucas County has in preparation for the meeting. The ladies who attend the meeting will not find time hanging heavily on their hands as pastime has been provided for them.

Basil B. Brim, Toledo, has opened a down-town office at 435 Superior St.

The Muskingum County Medical Society was tendered a banquet at the Clarendon Hotel, Zanesville, by J. T. Davis, April 19, 1910. C. F. Hoover and Hunter Robb of Cleveland who were to address this meeting were unable to do so owing to the tragic death of Mrs. Hunter Robb. Papers were presented by J. H. J. Upham, Columbus, on Lumbar Puncture, and by Frank Winders, Columbus, on the Practical Value of Blood-Pressure Estimation. After the banquet the following resolutions were adopted: *Whereas,* the Muskingum County Medical Society has heard of the deplorable accident that resulted in the death of the beloved wife and companion of one who was to have been our honored guest tonight, Dr Hunter Robb;

Resolved, That this society, in banquet assembled, bow our heads as a token of our grief and hereby extend to our honored brother our heartfelt sympathy in this his hour of great bereavement; and be it further

Resolved, That a copy of these resolutions be forwarded to Dr. Robb, and also be spread upon the minutes of the Muskingum County Medical Society.

The Summit County Medical Society met in Akron, March 1, 1910. The following program was presented: 1. The Present Status of Serum Therapy, Chas. E. Norris. 2. Erlich's Side-chain Theory, Chas. E. Held. Both papers were very well presented and conveyed in a very interesting and convincing manner the fact that the trend of medical investigation and therapeutics for the next generation would probably be along the line of these great principles.

The monthly report of A. F. Sippy, Chairman of the Milk Commission, showed that the certified milk furnished by Mr. Barker's Dairy maintained its high standard of excellence by showing a bacterial count of 6,000 bacteria per c. c. The people of Akron and vicinity have had access to certified milk now for about two years. Its introduction and continued existence is dependent upon the support and publicity given it by the physicians of Akron who feel that the fight of any dairyman in producing milk of such quality is their fight. They are anxious to enlist the influence of all physicians and public spirited people in the country in the support of certified milk.

Dell S. Bowman, of Akron, after receiving the recommendation for appointment by the Summit County Medical Club, the Summit County Ministerial Association, the Federation of Men's Clubs, the Young Men's Christian Association, and the Women's Council, was appointed by the County Commissioners a member of the Board of Trustees of the Summit County Children's Home.

The Board of Health of Akron, through the influence of the Summit County Medical Society and kindred organizations, has had its efficiency increased by a larger representation of physicians upon it. As a result, John F. Planz, veterinarian, has been appointed Sanitary Food and Dairy Inspector.

The Ashtabula County Medical Society held its fifty-second regular meeting in Ashtabula Tuesday, April 5. V. H. Tuttle, Orwell, O., read a paper upon "Appendicitis in the Hands of the Country Doctor."

The Erie County Medical Society met at the Good Samaritan Hospital, Sandusky, April 27. The following program was presented: 1. What Medical Societies Can Do to Prevent the Spread of Disease, W. D. Hoyer. 2. Practical Value of Laboratory Aids in the Diagnosis of Disease, F. Schoepfle.

H. C. Schoepfle, Sandusky, who has been seriously ill at Providence Hospital has so much improved that he has been removed to his residence.

G. H. Boehmer and wife who have been abroad for several months have returned to Sandusky.

Carrie Chase Davis, Sandusky, is spending several weeks at Washington, D. C.

John K. Tressel, on account of the illness of his wife, has moved from Alliance, O., to Jefferson, Wis., where he will open an office.

Perry F. King of Alliance has moved his office from the First National Bank Building to 317 E. Market St.

W. C. Manchester, Alliance, has moved his office from the Scranton Block, E. Main St., to 317 E. Market St.

The Physicians' Protective League of Mansfield met at the Southern Hotel, April 14, and adopted a new fee bill.

Y. L. Stevens, Mansfield, leaves in May to take up postgraduate work in Vienna and Berlin.

The staff of the Elyria Memorial Hospital met at the hospital Monday, April 18. F. S. Clark, Cleveland, gave an address upon Obstetrical Diagnosis.

C. H. Browning of Oberlin who is on a two months' fishing trip in Florida will return about May 1.

Lee Humphrey, Malta, O., has been appointed a member of the State Medical Board by Gov. Harmon.

T. N. Moore, Willoughby, will accompany Henry A. Everett of this city upon a trip around the world.

The American Proctological Society will hold the twelfth annual meeting at St. Louis, Mo., June 6 and 7, 1910. A very satisfactory program has been provided and the profession is cordially invited to attend all meetings.

The National Confederation of State Medical Examining and Licensing Boards will hold its twentieth annual meeting in St. Louis, Mo., on Monday, June 6, 1910, at the Southern Hotel.

The subjects to be taken up at this meeting will be a consideration of practical clinical instruction in medical colleges, a report on medical education in the United States by a representative of the Carnegie Foundation, and a report on a proposed materia medica list by a special committee. These topics are all practical and of vital interest to examining boards, medical schools and the profession. The contributors of papers to the symposium on clinical instruction are men of the highest standing in the medical profession, many of them teachers in some of the foremost institutions in this country, and their productions will be worthy of the most careful consideration. The chief object of this symposium is to determine, as far as possible, whether clinical instruction in medical schools can be made sufficiently practical and thorough so as to warrant the medical boards in demanding practical examinations in the principal branches of the medical course.

An earnest and cordial invitation to this meeting is extended to all members of state boards, professors and teachers in medical schools, and all others interested in securing the best results in medical education.

The officers of the Confederation are: President, A. Ravogli, M. D., 5 Garfield place, Cincinnati, Ohio; Secretary, Murray Galt Motter, M. D., 1841 Summit place, N. W., Washington, D. C.

Deaths.

Orlando Wood, Columbus, O., died March 14, aged 46.
Cyrus V. Gorrell, Payne, Ohio, died March 7, aged 66.
John M. Coombs, Hicksville, Ohio, died March 13, aged 77.
H. R. Trollinger, Homeworth, Ohio, died March 8, aged 85.
Greenbury L. Shipp, Little Hocking, Ohio, died Jan. 3, aged 47.
James M. Blackford, Columbus, Ohio, died March 26, aged 72.
David H. Reed, North Fairfield, Ohio, died March 21, aged 78.
Thomas B. Cable, Pemberton, Ohio, died March 20, aged 53.
Fred M. Scheib, Toledo, Ohio, died April 8, aged 50.
John R. King, Cincinnati, Ohio, died April 10, aged 65.
Charles F. Amos, Youngstown, Ohio, died March 21, aged 39.

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Some Reactions of the Vasomotor Center.

By TORALD SOLLMANN, M. D., and J. D. PILCHER, M. D.

(From the Pharmacological Laboratory of the Medical School of Western Reserve University, Cleveland, Ohio)

A correct appreciation of the conditions of the circulation demands the analysis of the different mechanisms by which it may be affected under various conditions. Amongst these mechanisms the vasomotor center holds a very important place, and its reactions have therefore been the subject of many investigations. The methods which are commonly used depend mainly upon the observation of the blood pressure or the volume of organs, or the vein flow. These serve admirably when the effects can be referred with certainty exclusively to the vasomotor center; but their analysis is usually impossible when there may be simultaneous changes in the heart, in the total volume of blood, or in the peripheral vascular mechanism. Since such complications cannot often be excluded, *a priori*, our knowledge of the central vasomotor reactions is still very limited. What we know or think we know is beset with considerable uncertainty. Certainty can only be reached by the use of methods which eliminate the complicating factors; *i.e.*, by so adjusting conditions that the circulation through the observed vessels can be modified through the vasomotor center, and in no other manner. This demands, of course, that the organ be separated from the systemic circulation, and subjected to artificial perfusion. If the vasomotor nerves are left connected with the center, the desired conditions are attained. The state of the vessels can be conveniently recorded by measuring the outflow of the perfusing fluid; a slowing of the flow corre-

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Read in abstract at the meeting of the Association of American Physicians, Washington, D. C., May, 1910.

sponds to central vasoconstriction or stimulation; a quickening of the flow means central vasodilation.

This is the principle of the method which we have employed. While the principle is universally applicable, it has some technical limitations; but under proper conditions it has yielded very satisfactory results. So far we have confined ourselves mainly to the splanchnic circulation, as illustrated by the spleen and kidney. Theoretical objections may be urged against the choice of each of these organs. In the spleen, the trabecular muscles constitute a possible complicating factor; while the vascular control of the kidney is usually supposed to be in some respects *sui generis*. When, however, the results in the two organs coincide, they may fairly be considered as typical of the splanchnic vasomotor reactions; and this uniformity has been the rule in our work.

Vasomotor Reflexes. The vasomotor center is easily influenced through the stimulation of afferent nerves. These reflexes are best investigated on curarized animals. During the rise of pressure which is produced by stimulation of the central end of the divided sciatic nerve, the flow of the perfusion fluid is practically always slowed (in the spleen, kidney, and opposite leg), showing the central vasoconstrictor stimulation. This slowing averaged 20%; and is about a third of that which may be produced by asphyxia; (incidentally, it may be remarked that the rise of blood pressure on sciatic stimulation is only about a fourth of that which may be produced by clamping the thoracic aorta).

The influence of the existing state of blood pressure on the vasomotor response is a rather interesting problem. Has the blood pressure any influence on the vasomotor center? We have fully confirmed the observation of Porter and his pupils, that sciatic stimulation produces the same rise of pressure (averaging 30 mm. in our experiments) whether the pressure before stimulation was 160 or 100 or 60 mm. (below this level the response is impaired). In other words, sciatic stimulation produces the same absolute rise from all physiological levels. Accordingly, the "percentile" rise is the greater, the lower the level of the blood pressure. A rise of 30 mm. would amount to an increase of 50% if it occurred from the level of 60 mm.; but to only 25% if it occurred from the level of 120 mm. In other words, if the "percentile" change is the correct criterion, then the excitability of the vasomotor center varies inversely to the blood pressure. If the "absolute" change is taken as the criterion, then the response of the center is not affected by the level of the blood pressure (provided that this does not approach the "shock" level). Which, then, is the correct criterion? Our method permits us to give a direct answer to this question—the response is *not* affected by the level of the blood pressure, and the "absolute" change is therefore the correct criterion. This conclusion appears to us to be in consonance with the mechanical considerations.

We would emphasize, however, that our statement of the independence of the vasomotor center from the blood pressure refers only to its response to stimulation, and not to the automatic tone of the center. These two functions must not be confused. Indeed, we shall show that an acute fall of pressure, as produced by hemorrhage, may increase the automatic tone. An increased automatic tone would, of course, be vastly more efficient as a protective mechanism against low blood pressure than would increased excitability to unusual reflex stimulation.

The Vagus Reactions of the Vasomotor Center. These can be studied to best advantage in dogs, since in them the vagus does not usually carry depressor fibers. *Stimulation of the central stump* (with both vagi divided) in curarized dogs gave results entirely analogous to those of sciatic stimulation. In no case was there any dilator effect in dogs (whereas dilation is almost constant in cats).

Section of Both Vagi, in non-curarized dogs, causes a slight vasoconstriction. This might conceivably be due to the rise of blood pressure (which averaged 25 mm.). Atropinized cats, however, in which the rise of pressure is insignificant (averaging 14 mm.) gave the same results. The constriction is, therefore, presumably due to a slight asphyxial stimulation from the slowed respiration which follows vagotomy.

Stimulation of the Peripheral Stump of the Vagus (in the neck). The cardiac inhibition would lead one to expect the usual result of cerebral anemia, namely stimulation. Evidences of this were obtained, even when the inhibition was quite incomplete. The rapid escape of the heart from the stimulation, however, renders the demonstration somewhat unsatisfactory.

Stimulation of the Vagus Depressor in the Cat. While the depressor can be isolated to best advantage in the rabbit, the technical difficulties of perfusing the small organs of this animal have deterred us from its use. Our experiments on the depressor have, therefore, been done on the cat. The union of the depressor and vagal fibers in this animal might be thought to render it less favorable; in reality, however, it renders the occurrence of depressor reactions even more striking, for these must overcome the pressor reactions which tend to follow vagus stimulation, at least in the dog. In our experiments the fall of pressure on stimulation averaged 60 mm. The spleen and kidney both showed dilatation, *i. e.,* the typical effect.

Compression of the Thoracic Aorta and Injection of Suprarenal. It is universally assumed that the physiological stimulus of the depressor nerve is furnished by excessive blood pressure in the aortic arch. It may be a matter of surprise that the evidence for this widespread assumption is very slender and unsatisfactory; but such is the fact. If this is, indeed, the function of the depressor nerve, then the artificial raising of the blood pressure, either by aortic compression or by suprarenal injection, must quicken the perfusion flow.

Our experiments, however, show that the results are just the opposite. The typical effect of both these measures consists in moderate central vasoconstriction. This not only in the dog, in which the depressor mechanism is, perhaps, relatively inactive, but also in the cat, in which depressor stimulation, were it present, could be easily demonstrated by our method.

If we are correct in our conclusion that the depressor nerve is *not* normally stimulated by high blood pressure, what then is its function? We have no answer ready to this question. G. N. Stewart has made the interesting suggestion to us, that the depressor nerve might control the caliber of the systemic vessels chiefly in the interest of the *lesser* circulation. In view of the imperfect direct vasomotor control of the pulmonary vessels, this would be an advantageous arrangement for protecting the right heart and lungs against excessive pressure.

We should add, however, that prolonged or repeated aortic compression causes some injury to the center, so that its response to subsequent stimulation is not as strong; and that as an aftereffect of suprarenal injection, there may be some central vasodilatation as the pressure is falling toward normal.

As to the mechanism by which high blood pressure stimulates the vasomotor center, we are very much in the dark. It may be simply through increased intracranial pressure. The constriction is probably not sufficiently powerful to have much functional significance.

Asphyxia. Partial and complete asphyxiation was produced by various methods, with identical results, namely, prompt and very powerful constriction. Even relatively slight asphyxia, such as is secured by breathing through a long tube, produces sufficient vasomotor stimulation to influence the outflow. With complete asphyxia, especially if it occurs suddenly and the center is at all active, the constriction is vastly more powerful than we have been able to secure by any other means. Since this occurs as readily in curarized animals, the constriction cannot be attributed to convulsions.

The constriction outlasts death—or rather cardiac arrest—for a minute or so. Sometimes, indeed, it may not set in until the heart has stopped, and usually it becomes more pronounced during the fall of pressure which terminates the asphyxia. This is a very striking example of the failure of the systemic blood pressure to picture the state of the vasomotor center.

If the asphyxia is removed, as by the timely administration of oxygen, the vasoconstriction also passes off; or if it is allowed to proceed to death, the center becomes paralyzed in a short time, usually within two minutes, and the outflow is thus quickened.

Cardiac Arrest. Sudden cessation of the heart beat, secured by overdoses of strophanthus or by other means, produces the same extreme constriction as sudden asphyxia, the mechanism in the two cases being doubtless identical.

Cerebral Anemia, by occlusion of both carotid arteries, also causes constriction—not very pronounced, but generally about as much as would correspond to the rise of the blood pressure. We have already discussed the results of cerebral anemia by cardiac arrest or by slowing the heart through vagus stimulation.

Hemorrhage. The effects of hemorrhage vary with its severity, and into this enters the condition of the animal as well as the absolute loss of blood, the vasomotor center being successively stimulated, depressed, and paralyzed. In progressive bleeding, the typical reactions of the vasomotor center proceed in about this order:

Slight hemorrhage causes constriction, which becomes more and more pronounced, to a certain limit. The maximum constriction is observed when the loss of blood reaches, on the average, one-third of the total blood content, or 25 c.c. per kg., or when the blood pressure has fallen to about 95 mm. When the hemorrhage exceeds this degree, the constriction is replaced by progressive dilatation. When half the blood (37.5 c.c. per kg.) has been lost on the average, or when the pressure has fallen to 30 mm., the dilatation has reached its extreme limit, *i. e.*, the paralysis of the vasomotor center is complete.

If the blood is reinjected before this point is reached, the center will recover its tone and the blood pressure will return to normal. If, on the other hand, the hemorrhage is prolonged beyond the point of maximal dilatation—in other words, until the center is completely paralyzed—then the reinjection of the blood does not restore the tone of the center. This means that the paralysis is irrecoverable, at least within a few hours. In this condition the reinjection of even a part of the lost blood may raise the pressure to about 60 mm.; but it cannot be brought above this level, no matter how much fluid is injected. Evidently the heart, in the absence of all central vasomotor tone, can only maintain the pressure at the level of about 60 mm. Nevertheless, an animal may live at least several hours with its vasomotor center paralyzed in this manner.

It is worthy of remark that the vasoconstriction in hemorrhage is at no time anywhere near as great as that produced by cardiac stoppage. While cardiac arrest slows the flow by 75% or more, the slowing in hemorrhages amounts to but 33%, even in fatal cases. This is attributable to the slower course of the anemia, which allows the center time to become injured before the stimulation becomes maximal. This fact, that injury of the vasomotor center goes hand in hand with its stimulation, may have considerable practical significance.

Infusions of Normal Saline Solution. It is well known that the rise of pressure on saline infusion is usually only of moderate height and brief duration. This points to vasodilatation, which is confirmed by the increased volume of organs. This vasodilatation, however, need not be of central origin—it might be peripheral or purely mechanical, or possibly largely cardiac. As a matter of fact, our experiments show that intravenous saline infusions of 1 to 90 c.c. per kg. tend to stimulate the vasomotor center, at least for the spleen. Central dilatation is altogether exceptional; it occurred but once in six experiments. More often there is no central effect.

There is almost complete parallelism between the response of the center and of the blood pressure. Whenever the saline injection causes a somewhat lasting rise of pressure, there is central vasoconstriction. If the rise is not sustained, or if the pressure falls, the vasomotor center also shows no response. The stimulation of this center, therefore, has an important bearing on the therapeutic efficiency of such infusions.

The injection of saline solution into bled animals also causes constriction.

Our experience with overtransfusion of blood is still too limited to justify conclusions.

The Effects of Drugs. It may be permissible to refer to the results which we have obtained with drugs. We do not purpose entering into this matter in detail, in the present paper, but will mention only the direction of their central action, without trying to distinguish whether the effects are direct or indirect:

Considerable constriction	*Moderate constriction*	*Practically negative*
Strychnin (small doses)	Nitrates	Pituitary.
Caffein	Curare	Berberin
Nicotin	Suprarenal	Hydrastinin
Cyanid	Hydrastis	Atropin
Aconite (toxic doses)	Hydrastin	Aconite (small doses)
	Veratrum	
	Cevadin	

Dilatation	*Variable*
Chloroform	Ergot
Strychnin (toxic doses)	

CONCLUSIONS. 1. A method is described for eliminating the complicating factors in the study of the vasomotor center.

2. The most powerful stimulus to the center is its asphyxia or anemia. Fairly powerful constriction is produced by stimulation of sensory nerves; by raising the blood pressure; by moderate hemorrhage; by saline infusion; by a considerable number of drugs, acting either directly or indirectly.

3. The center is easily injured by asphyxia, anemia, and hemorrhage, and if the condition is severe even for a few minutes, the injury is permanent.

4. Direct depression of the center is caused by chloroform, by toxic doses of the strychnin, and by stimulation of the depressor nerve. This nerve does not seem to be stimulated by high blood pressure.

5. It is interesting and worthy of remark that primary constrictor reactions are vastly more numerous than primary dilator reactions; but that many forms of primary constriction pass into secondary depression through injury of the center.

Poisoning by Carbon Monoxid.

By MARTIN FRIEDRICH, M. D., Cleveland.

Nineteen persons died last year in Cleveland from the absorption of gases, two of whom committed suicide and 17 were asphyxiated accidentally. In no instance was carbon monoxid mentioned on the death certificate, although it is highly probable that all 19 deaths were caused by it alone. It seems as if the medical profession wanted to ignore this dangerous gas which is constantly present in our smoky atmosphere, and is a potent factor in the production of disease and death.

Cleveland consumes yearly about 5,000,000 tons of coal—75% of which at least is carbon. If oxidation were complete in every instance, the 3,750,000 tons of carbon would be converted into carbon dioxid (CO_2) a chemically saturated, non-poisonous product. But the cloud of smoke that hangs over us continually is sufficient proof that combustion is frequently incomplete. And if one percent of all the carbon which is burned here yearly were insufficiently oxidized, we would manufacure carbon monoxid (CO) at the rate of 8,750 tons yearly or just about 240 tons daily. Add to it the amount produced by the incomplete combustion of coal-gas and natural gas (I have no figures available from either source) and the figure becomes startling, especially when we consider that carbon monoxid has nearly the same density as air and is easily carried along with it. Further, it is odorless, colorless and almost tasteless: all negative properties which make it just so much more dangerous.

We all agree that smoke is detrimental to health, for we know that people are easily overcome by it, especially when it is dense and confined. We also know that in burning buildings persons are frequently suffocated before the fire reaches them. To explain these phenomena, all kinds of reasons are adduced. It is certainly not the finely-divided carbon that produces syncope and death, but carbon monoxid which is produced in great abundance by any starting fire. In fact, every whiff of smoke that issues from any fire is impregnated with carbon monoxid. This is the best and most powerful argument for the abatement of the smoke nuisance, for it cannot be denied that a smoky atmosphere contains constantly a deadly poison and sometimes in large quantities. The Union Depot before the skylights were removed was a most unwholesome place. The blacksmith forges

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of the B. & O. Railway shops, before we enforced devices for carrying off the smoke, were a constant danger to every workman. This brings me from the outdoor atmosphere into enclosed spaces.

We had several deaths from asphyxia occurring in houses where gas was used as a fuel. Investigation showed in every instance that the chimneys were clogged up with soot so that the products of combustion could no longer escape. This led me to have investigated all houses in which gas was used. To my astonishment we found over a thousand instances where gas-heaters had been installed without any provision whatsoever for carrying off the products of combustion. When I ordered them removed, the firm which had installed them protested, saying that "there was no need to make any provision for the removal of the products of combustion as there were none. Everything was consumed by fire and nothing left. In future, houses could be built without chimneys." They went from house to house teaching their new doctrine and the people believed them readily. We found these new gas-heaters even in the houses of the more intelligent people, even in a high school. An institution that employs a chemist among its teachers can surely not plead ignorance, but the chemist had not been consulted. Some of these heating devices were placed in the floors, whence they belched up their gases into the living rooms, store, shop or manufacturing place, whatever it might be. Others occupied the place of a former coal-stove. The worst type of all was the movable heater which could be attached to a gas-jet by means of a rubber tube and placed anywhere. The people thought that they were the ideal heating apparatus for small rooms, especially bedrooms. Just imagine a small sleeping room with insufficient air-space for its occupant, as they usually are, and place in it a movable gas-heater to burn there the whole night with no provision whatsoever for the removal of the products of combustion. With the windows closed and the gas-heater consuming at least six times as much oxygen as an adult person, the percentage of oxygen in the room will soon sink so low, that the sleeper can no longer satisfy his system and that the carbon of the gas can no longer be completely oxidized and of necessity carbon monoxid is formed. Many people have confessed to me that they used to wake up in the morning more dead than alive.

There is nothing perfect in this world, and complete combustion at all times, I believe, can never be obtained. Every fire will, at times, produce carbon monoxid, especially when ventilation is poor. An open hearth in an enclosed room, especially when there is not ample provision made for the removal of the products of combustion, is a continual and imminent danger to health. The open gas-ranges for cooking which have no provision for flue connection will soon undermine the vitality of everyone who uses them. We found them, for instance, in bakeshops, where they were used for making friedcakes. As almost all the bakeries are located in basements where ventilation is naturally poor, these stoves were most dangerous for the workingman. But they are used also in private families, always without the consent of the gas companies, for they are fully aware of the dangers of an unconnected stove.

Then we have the gas-plates which are used mostly where much ironing is done—for the heating of flat-irons as in laundries and tailoring establishments. But they are also used for cooking and, *horrible dictu,* they even found their way into our schools. Dr Ford and I lately went to see one of the cooking schools and found along with two large connected gas-stoves 25 two-burner gas-plates in a room of 11,861 cubic feet of air-space. Every one of these gas-fixtures consumed probably 12 times as much oxygen as an adult person would, so that we had in this room, besides the 25 girls and their teacher, the equivalent to 324 more persons to draw from the oxygen of the room. When we figure that there was no more than what would amount to about 34 cubic feet of air to a person, we can easily see that there is no ventilating system which could supply the required amount of oxygen without causing bad draughts, and a simple example of arithmetic shows that under these circumstances neither the girls could supply the demand of their systems for oxygen nor could the carbon of the gas be saturated, and the lowering of vitality on the one side and the formation of carbon monoxid on the other were natural consquences.

There are many other instances where carbon monoxid is produced in enclosed rooms. I cannot enumerate them all, but mention here the cigar-smoke which contains CO, and an atmosphere heavily charged with cigar-smoke has a deleterious influence on all who inhale it. A smoking gas-jet or lamp also produces CO, and by no means in negligible quantities. The closing of the damper to keep in the heat will also keep in this deadly poison which is very diffusible and easily penetrates the walls of a stove to permeate the room.

Carbon monoxid is not only formed by burning carbon in any insufficient supply of air, it is also formed by reduction when CO_2 is passed over red-hot coal as in our blast-furnaces. The chemical equation is: $CO_2 + C = 2\,CO$. This transfer of carbon, as it is called, occurs constantly in a blast-furnace. As the gases are forced in at the bottom they meet the red-hot coal and CO is formed. As they ascend in the furnace, they pass through the next layer which is iron-ore. This they help to reduce and CO_2 is formed. The next layer is again a layer of red-hot coal and again the CO_2 is reduced to CO. And so it goes on until finally the gases reach the top of the furnace where they consist of from 25 to 32% of CO. From there the gases are forced down again through the down-comers, pass through the dust-collectors, then through a pipe to the gas-washer, and then are returned to the stoves. It is a continual circulation and a continual change from carbon monoxid to carbon dioxid and vice versa. The pipes which return the gases to the stoves have openings, just before they enter the stove, for the admission of air. Reversed currents of air throw back an atmosphere which is heavily charged with carbon monoxid. A whiff of it is sufficient to cause severe headache if it does not make one dizzy. Besides there are always leakages through the furnace walls which consist of a cast-iron jacket with a two-foot brick lining, and here and there a copper cooling plate through which cold water passes continually. It is not a rare occurrence that in a blast-furnace a man is overcome by carbon monoxid. The workingmen say "he is gased." When the wind is in the wrong direction, practically all the men are under the influence of the baleful gas, and all complain of headaches and dizziness, although they work practically in the open air. They all know the cause of their ailments and the places of most danger. Last spring a colored man went up alongside of the furnace to clean the cinders off the roof. This was directly against orders, for the place around the furnace wall is known to be dangerous at all times. He was not half way up when he fell unconscious. The other workmen came to his rescue, but before they got him down seven other men became unconscious—one of them died on the spot. The colored man, who was the fault of it all, and was exposed longest, recovered consciousness first and walked home. The other six were taken to the City Hospital, where they finally all recovered. Our firemen are sometimes overcome by carbon monoxid when they come too near red-hot cinders on which water has been thrown, as then a great deal of this gas is given off from them.

There are other sources of CO, as lime-kilns, the burning of charcoal, etc., but as they are of no practical import for us here in Cleveland, I pass them over.

The action of carbon monoxid upon the human system is now well-understood. It has a greater affinity for hemoglobin of the red corpuscles of the blood than oxygen has, and when inhaled, combines with it forming carboxyhemoglobin, a stable product that does not give oxygen to the tissues. The oxycarbonized corpuscles lose their usefulness for the organism. They can no longer carry available oxygen nor collect CO_2 to bring it to the lungs for excretion. The deleterious action of carbon monoxid is therefore two-fold. It lessens or eventually stops the supply of oxygen and it lessens or eventually stops the excretion of carbon dioxid. The final outcome depends upon the amount of gas present in the air and the length of time one remains in the vitiated atmosphere. Mr. Grehant asserts that one part in 5,000 of air will impregnate one-eighth of the red corpuscles and one part in 1,000 half of them. Eulenberg and Pakiowsky claim that one percent or even one-half percent will produce death. What becomes of the oxycarbonized red corpuscles is not exactly known. They are probably all destroyed, which would explain the anemia which always follows poisoning with CO.

The symptoms vary a great deal according to the amount of gas inhaled. When massive doses are taken in, as is not infrequent around the blast-furnaces, the victim may fall unconscious in a few seconds and die without gaining consciousness after a few spasmodic respiratory movements. The heart stops last. When small doses are inhaled for a long time, the first symptom is usually a splitting headache. The temples seem to be compressed and noises are heard in the head. Also flashes of light appear before the eyes. Then comes dizziness, the victim staggers, as if intoxicated, and may suddenly break down, limp as a rag, without power to help himself. The pupils dilate. An agonizing retrosternal pain usually appears just before he loses consciousness. When removed into pure air, he revives slowly, wakes up in a dazed condition, feels sore all over and is very weak.

Of special interest for the physician are the cases of chronic poisoning with CO where small doses are absorbed at frequent intervals. The Buckeye Lamp Company employed about 700 young women, who worked at open fires. Gas was the fuel used and no provision was made for the carrying off of the product of combustion. Two years ago I examined all these young women in a cursory way, and every one was anemic. They all looked listless and tired, and objected to the opening of windows, although the rooms were much over-heated and the atmosphere stifling. They had not enough red blood-corpuscles to carry sufficient oxygen to their tissues and produce heat. A much over-heated atmosphere that would be intolerable to a healthy person was comfortable to them. It helped to keep up their body temperature. I believe that the cause of a great many cases of anemia is chronic carbon monoxid poisoning. In these cases the treatment is without effect as long as the cause is not removed.

The treatment of carbon monoxid poisoning is almost wholly in the nature of prevention. People who are so much overcome by the gas that they stop breathing usually die without regaining consciousness. When they are brought into pure air before breathing has stopped, they have a good chance for recovery. Transfusion of blood has been recommended. It looks rational, but most of the cases in which it has been perfomed would probably have recovered without it. The after-effects manifest themselves mostly through the nervous system. Anything may happen from hysterical symptoms to softening of the brain. In my opinion, they are simply the effects of a disturbed nutrition. Where there is a lack of oxygen-carrying power, no tissue is well-fed and the nervous tissue, being the most delicate, feels the effects of it most.

Tuberculin in the Diagnosis and Treatment of Surgical Tuberculosis.

By WALTER G. STERN, M. D., Cleveland.

Orthopedic Surgeon to the Mt. Sinai Hospital, Lecturer on Orthopedic Surgery at the Cleveland College of Physicians and Surgeons, Fellow of the American Orthopedic Association, etc.

Foreword: This paper being essentially a resumé of the writer's clinical experience, during the past three years, in tuberculosis of the bones, joints and glands, all merely scientific and

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theoretic considerations have been omitted. Those who care for this side of the question are referred to the latest book, "Frühdiagnose und Tuberculose—Immunitat," by Wolff-Eisner of Berlin.

The entire trend of medical and surgical endeavor in relation to tuberculosis is to find some certain means of curing this affection. It has always been apparent that the hope of cure—as in cancer—lay in the earliest possible diagnosis and treatment, and with this end in view clinicians have sought every possible sign or symptom which might be of aid. The laboratory has rendered enormous assistance in the way of clinical microscopy, and Koch by his discovery of the original tuberculin, T. O., and the general tuberculin reactions, laid the groundwork for the more commonly used reactions of the present day. Of these specific reactions there are two great divisions:

1. Local tuberculin reactions.

2. The general tuberculin reaction. For all varieties of these reactions Koch's original tuberculin, T. O., or as the Germans name it T. Alt, is used.

1. *The local reactions to tuberculin:* These consist of an inflammatory manifestation at the point where the tuberculin is introduced into the system. They are all dependent upon the phenomenon of anaphylaxis.

(A) Prick reaction: One drop of T. O. is injected into the mucous layer of the skin by means of a very fine needle, in the same manner as one injects infiltration anesthesia (Schleich). In 12 to 24 hours, if the reaction be positive, a small red papule appears at the site of the injection. This method is exceedingly reliable but is little used.

(B) Cutaneous reaction of v. Pirquet: When a drop of tuberculin is rubbed into a small abrasion made in the skin, within 24 to 48 hours a small area of skin around this abrasion becomes reddened and slightly infiltrated. In practise the reaction is to be performed as follows: The skin over the deltoid muscle is cleansed with soap and alcohol; then with a suitable instrument three small abrasions are made, one inch apart and one directly below the other. A special instrument has been devised by v. Pirquet for this purpose, but I have found that a No. 4 dental burr, inserted into a watchmaker's universal screwdriver with a knurled metal handle and a revolving button top, makes a satisfactory instrument. The abrading of the skin can be performed painlessly in less than one second; the dental burrs are razorsharp, cost but 10 cents apiece and a fresh one can be used each time and then thrown away, thus avoiding all danger of transmitting infection. A drop of T. O. is rubbed into the upper and lower of the three abrasions with a suitable metal instrument and the arm is exposed to the air until the tuberculin has dried, which takes about 10 minutes. It is no longer necessary to place a drop of carbolized glycerin in the center one as a control. Within 48 hours a positive reaction will manifest its presence by a small red area of infiltration around the upper and lower abrasions: it is easily distinguished both by sight and touch when compared with the central control abrasion. The usual lithographic reproductions of this reaction, as well as of the eye reaction, are altogether too vivid in their coloring, and many mistakes have been made in calling a reaction negative because it lacks the intense contrast which the illustrations usually show. The skin test is a most delicate one and experience has shown that it reveals tuberculosis both past and present, latent and active; and is therefore of absolute diagnostic value only in children, whose past is, of course, a *tabula erasa* as far as tuberculosis is concerned. In adults it is useful only as a confirmatory sign; a diagnosis of the presence of an active tuberculosis in adults should *never* be made from the presence of the v. Pirquet reaction alone. The absence of a positive cutaneous reaction is, however, a strong indication of the absence of a tuberculous infection.

(C) In the discussion in the Berlin Medical Society, following the first public announcement of the discovery of v. Pirquet's reaction, Wolff-Eisner of Berlin announced that if one drop of a one percent solution of Koch's old tuberculin were instilled into the conjunctival sac of the eye, a slight reddening of the scleral and palpebral conjunctiva, and especially the caruncle, will manifest itself within 24 hours, if the patient have an active tuberculosis. Calmette of Lille, France, advocates the use of a one percent solution of precipitated and purified tuberculin for the same purpose. This reaction is harmful if used in any other but a normal eye; so that its use in ophthalmology is prohibited. A careful examination must always be made to see that the patient has never had phlyctenular ulcers, etc. When the test is made with sufficiently weak solution in eyes that are, and have been, sound, no permanent harm need be feared from its use. I have made, or caused to have been made by a competent ophthalmologist, over 300 of such eye tests and have not experienced any untoward results. The conjunctival test is not as delicate as the cutaneous reaction and does not reveal latent or cured tuberculosis; it is, therefore, the most reliable local test in adults and when positive indicates active tuberculosis in both adults and children. The use of tuberculin in the conjunctiva seems to sensitize it and conclusions drawn from repeated instillations are most likely to be fallacious.

(D) The Moro inunction test, from the very nature of things, is unreliable.

The value of these local tests could, of course, be told only by long and painstaking clinical investigation. Ordinary experiments, as would be made in other diseases, are of little or no value because of the inability to accurately control the material. To try these reactions on all hospital, dispensary or even private cases and tabulate the results according to the clinical findings could be only approximate because it is a well known fact that a good proportion of patients presenting themselves at the office, hospital or clinic are, or have been at some time, victims of a hidden tuberculosis. To pick up one thousand people from off the street, from an orphan asylum or from a body of college students is no more accurate for the same reason. The superintendent of one of the largest orphan asylums in this country, in which the mortality and morbidity rates have always been astonishingly low, has repeatedly informed me that an exceedingly large percentage of the many children who have come under his charge have come from tuberculous homes. The newly born furnish the only real "controllable" material and none of them give positive local tuberculin tests immediately after birth. The only absolutely accurate figures, except these, are from those patients known to have tuberculosis, of whom 84% give positive local tuberculin reactions. These figures are low because in tuberculous patients in extremis, or in what the Germans call the third stage, only 61% give positive reactions. The best tabulated figures are the following:

	Positive	Negative
Among the comparatively healthy	7.2%	92.8%
In the first stage of tuberculosis	92.0%	8.0%
In the second stage of tuberculosis	82.0%	18.0%
In the third stage of tuberculosis	61.0%	39.0%
In all stages of tuberculosis	84.0%	16.0%
In suspected cases of tuberculosis	55.1%	44.9%

Comparing the results from the healthy and in the first stage of tuberculosis the apparent error will be found to be only seven to eight percent.

2. *The general or subcutaneous tuberculin reaction:* This dates from Koch's discovery of tuberculin and is by all odds the most reliable, though at the same time the most dangerous and difficult. If restricted to a single injection of a sufficient dose in a fever-free patient, a positive reaction is an indication of an active tuberculosis. The dose varies from 0.5 mg. to 5.0 mg. according to the condition of the patient, etc. Repeated injections of increasing doses have been known to sensitize the patient and to reveal a latent or cured tuberculosis. The danger of the subcutaneous test in awakening quiescent local conditions should always be considered.

The plan which I have practised for the past three years on over 250 cases, and which I can earnestly recommend, is as follows: If a case presents any clinical suspicion of being tuberculous, the patient should be carefully questioned for a history of eye troubles and a thorough examination of the eyes made. Should these be found to be free from signs of disease, a conjunctival tuberculin test is made. If there be any doubt as to the condition of the eyes an ophthalmologist should be consulted as to the advisability of performing the test. At the same sitting a skin test is made and the patient is ordered back for examination in 24 hours. If neither test is positive he is again seen at the end of 48 hours. If both tests are now positive I conclude that the patient is suffering from tuberculosis; if both tests are negative I conclude that the patient is free from tuberculosis. If one is positive and the other negative, I order the patient to bed and when he is fever-free I give him a single subcutaneous injection of tuberculin. If the patient reacts, I diagnose tuberculosis, but if there is no reaction I rule out tuberculosis. My entire practise, and the deductions drawn therefrom, presupposes that the patient has at least some clinical signs whereby a suspicion of tuberculosis has been awakened. I have always refused to pass any opinion upon positive reactions among those who present no clinical signs—among the apparently healthy—because, as has been previously stated, there is no way of ruling out, for instance, bronchial or mesenteric glandular tuberculosis, etc., and also because there must always be a certain percentage of error in this as in any other test.

As regards accuracy, I make no claim that such a combination of tests, as outlined above, even when backed up by clinical signs amounting to at least a suspicion, is infallible—there are no infallible tests in medicine; but I do claim that in the long run they will be found by any impartial observer to be as accurate and reliable as any other experimental test in medicine. Tuberculin has not as yet replaced brains in diagnosis. In an experience of over 250 cases, most of which were in the earliest stages, I cannot recall having had as yet one failure in finding two out of the three tests positive when the case was clinically tuberculous, and negative when the case was clinically non-tuberculous. Inasmuch as I have had but one death (an adult who died from acute cardiac dilatation six months after I ceased treating him for spinal tuberculosis, and who had had acute endocarditis and myocarditis eight years before) and no autopsy records to prove my diagnoses, the entire contention of the paper lacks that final indisputable anatomic proof, which I hope our advanced therapeutics will always compel us to do without. The exact status of these tests has not as yet been determined and probably will not be for a number of years to come: the haphazard careless way in which some of them are being used is also not conducive to accuracy. It is the hope of the writer that the readers of this paper, if they feel interested in the subject, will use these tests with care in the manner described and compare their results with the clinical findings and the subsequent history of the case; this is the only way in which a sufficiently large number of accurate clinical observations will be at the command of future compilers.

The following cases are fair examples of the aid the local tuberculin tests render in diagnosing obscure cases:

B. S., aged five, presents a family history free from tuberculosis. He has always been a "fresh air child" and always in robust health. Three months ago, after a hard evening's play which consisted mainly in turning somersaults across the bed, he awoke at midnight screaming with pain in the hip. His father, a physician, noted that there was spasm and rigidity of the muscles of this hip, and that the child screamed with pain when any attempts were made to move the limb. The next morning the symptoms were still present though to a much milder degree, and there was a slight rise in temperature. A brisk cathartic evacuated a large quantity of ill smelling feces, and within a few hours all symptoms subsided. For a few days the child felt weak and uncertain on his feet, and walked with a slight limp but experienced no further pain. Ascribing this attack to the violent play of the evening before the father paid no further attention to the matter.

About three weeks later the child ran screaming into his father's room at about 11 p. m., complaining of pain in the same hip which was now supposed to have been caused by a fall from the bed. The same chain of symptoms was presented and the same treatment was employed. After a two months' interval, during which the child suffered no pain, he experienced a third attack occurring at midnight. An examination made a few days later revealed absolutely nothing abnormal except that the child seemed a little weak and unsteady upon his feet and had a slight limp of the left hip. His appetite was poor, he had lost a few pounds in weight, but had had no night sweats or cough. Motion in the hip was normal.

Was this the beginning of hip joint disease? The absence of fixation and muscle spasm in the pain-free intervals spoke against it, but the night starts seemed in character to be absolutely typical of a beginning tuberculous hip-joint disease. X-ray photographs revealed a normal hip joint, the Calmette eye test and the v. Pirquet skin reaction were negative, and I unhesitatingly pronounced the case non-tuberculous. Upon close questioning it was remembered that upon the evening of each of the attacks, the child had partaken freely of roast veal, of which he was very fond, and that the family had not indulged in roast veal at any other time during the past three months. Suspecting the ingestion of veal to be the cause of the attack, it was ordered stricken from his diet and from that day to this, a period of over 14 months, there has been no return of the symptoms and the child is enjoying perfect health. In this instance tuberculin was of inestimable value in arriving at the correct diagnosis.

H. R., aged 10, has a tuberculous history on the mother's side of the family. The father is said to have been luetic, but there is no history of miscarriage or signs of lues on the part of the mother. The child has always had pain and deformity in the left hip since earliest infancy, but there is no history of abscess or fever. She walked at the age of two years but with a limp. From that time up to four weeks ago she has been able to play about and go to school, but has never been able to keep up with the other children, and there have been many periods of from one to three weeks during which she was confined to her bed with pain in the hip and inability to walk. She has been intensely neurotic at all times and has been under treatment by competent authorities for hysteria. She has never had a rash, sore throat, bad teeth or any tertiary syphilitic lesions.

Four weeks ago, while standing on a chair attempting to hang a picture, she fell down and struck the left hip. Since that time she has been suffering from acute pain in this hip, especially at night, which necessitated nightly doses of morphin. She has not been able to walk or stand on account of pain. Her appetite is good. She has no night sweats and no cough, but there is an evening rise of temperature to 99° and 99½° F.

Examination revealed a large, well developed girl with a saddle nose but no deformed teeth. Eyes and ears are normal. There are no skin scars and no glandular enlargements. Her demeanor is that of an hysteric. She screams and loses all self control at every attempt or even suggestion to make an examination. It is impossible to tell from her expression whether she suffers pain or not. Lungs and heart are negative, abdomen negative. The left hip is firmly ankylosed in 30° flexion, 10° adduction and 5° internal rotation. There is a marked lumbar lordosis, the left hip is very prominent and the trochanter is above Nelaton's line. The limb is two inches shorter than its fellow, and is somewhat atrophied. There is a thickening of the entire area over the hip joint and the trochanter. Attempted motion and pressure over the above area elicit screams of pain and attacks of pseudohysteria. The temperature is 99½°, the pulse 96. Treatment by extension was tried for 14 days.

The diagnosis of this case presented many difficulties. Lues, hysteria, gonorrhea and tuberculosis had to be considered. The girl was evidently an hysteric, she presented the saddle nose of lues, she was old enough and well enough developed physically to suggest the possibility of a Neisser infection, while the general appearance of the case resembled tuberculosis.

During the following two weeks she showed an almost normal evening temperature, the extension relieved the spontaneous pain but the patient remained hysterical as before. The v. Pirquet skin test and the Calmette eye test both showed positive reactions for tuberculosis within 18 hours after inoculation, and the x-ray showed extensive destruction of the head of the femur and the upper rim of the acetabulum, confirming the diagnosis by the tuberculin tests. The case is therefore positively one of tuberculosis.

H. F., aged 14, negative family and personal history, has had a peculiar halting gait for three months, together with loss in weight and inability to continue at play. Two days ago, while playing on a see-saw she fell down and struck her left hip. She was in bed on account of pain for two days when she was brought to my office for examination. The left hip is fixed upon the pelvis in slight adduction, flexion and internal rotation, there is lumbar lordosis and apparent shortening, also pain on motion. An x-ray photograph was taken and the Calmette and v. Pirquet reactions made. The x-ray showed a small diseased area in the center of the head of the femur, the v. Pirquet reaction was positive while the Calmette reaction was negative. The hip was fixed in a plaster case and the girl put to bed. After one week she was pronounced fever-free and a subcutaneous injection of 0.1 mg. of tuberculin was given: in 12 hours her temperature had risen to 100.4°, in 24 hours it was again normal and remained so for the following three days, after which she was allowed to get up.

Although the eye test was negative, the skin and subcutaneous tests bore out the conclusions arrived at from the history, examination and x-ray pictures.

Another instructive case is the following: B. K., aged 28, was shot in the left gluteal region in a students' riot in Russia five years ago. The steel jacketed bullet entered just above and behind the trochanter, pierced the sacro-iliac joint and emerged through the skin in the median line. Disguised as a soldier he lay in a military hospital for more than a year, when he made his escape to America. His wounds had then been closed for more than six months and he was in robust health. He became a cigar maker and has worked for the past two years as neighbor to a man who coughed and expectorated a great deal. One year ago the old skin wound over the sacrum became red and inflamed and finally opened up, discharging a small quantity of pus. It soon closed but has opened and discharged about six times since then. He has lost in weight and has had a feeling of ill being but no cough and no fever. He has pain and tenderness in the sacro-iliac joint especially upon standing and walking, and at times the pain shoots down the back of the left leg much as in sciatica. He has made the rounds of most of the hospitals and clinics, refusing operation. He was sent to me with the request that I inject the fistula with bismuth paste on the supposition that the fistula was from the bullet wound. The local tuberculin reactions were both positive and an x-ray photograph showed the bismuth-vaselin paste in the interior of the sacro-iliac joint. The subcutaneous injection, made to verify the above findings, was also positive and the operation performed three months later revealed undoubted evidences of tuberculous disease.

In the treatment of surgical tuberculosis, the use of tuberculin has been followed by favorable results in my hands. I can only repeat what I reported to this society one year ago. My results have been uniformly better, my patients have arrived at the point where they could be discharged from active treatment in shorter time (although they must continue to wear a protective brace and keep up their fresh air and forced feeding cure for at least two years thereafter), and my complications, although few before, are still less in number and severity.

Ridlon of Chicago, in the *Practical Medicine Series,* Vol. X, No. 11, has criticised my former paper[1] in which I advised in these cases the use of small doses of tuberculin, given according to the method of Trudeau, and in which my reasons for so doing were given. My last 18 months' experience has only confirmed my former conclusions, that small doses of tuberculin, when given according to the teachings of Trudeau, are harmless and when used discriminately in conjunction with every known hygienic, medical and surgical measure indicated by modern treatment of surgical tuberculosis, are of material aid in curing the disease. As was said in the previous paper it is no specific or cure-all.

Since writing the above the papers of N. Raw (*Lancet,* March 26, 1910) and Engel (*Medizinsche Klinik,* Vol. VI, Nos. 10 and 11) have been published. Both of these authors have arrived at practically the same conclusions as I have in regard to the value of tuberculin in the treatment of surgical tuberculosis.

821 Schofield Bldg.

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[1] *Cleveland Medical Journal,* Vol. VIII, No. 3, March, 1909, pp. 117-126.

Routine Otoscopy in the Febrile Affections of Infancy and Early Childhood.

By ALFRED S. MASCHKE, M. D., Cleveland.

It is my intention to cite some evidence concerning the extreme frequency of otitis media in infancy and early childhood; to show especially its frequent occurrence concomitant to other febrile affections; to point out briefly its frequent lack of a symptomatology adequate for diagnosis; and to animadvert to the menace both to life and to function which exists as the result of its non-recognition. In 1881 von Troltch called attention to the extreme frequency of otitis media in infants brought to autopsy; and since von Troltch, Wreden, Krutcharian, Ponfich and many others, and lately in 1904 Preysing have brought forward abundant postmortem material to substantiate his statement. Preysing's statistics are chosen for a brief review because they are in accord with his numerous predecessors and because the work was carried out within the bacteriologic era. In 100 autopsies on children from one day to three years old, Preysing found an inflammation of the middle ear in 81; only 8 cases were unilateral, thus making a total of 154 diseased ears. Of these cases 85 were from unselected material, the children dying from various affections; the last 15 cases were all in tuberculous children.

Clinical testimony as to the frequency of otitis media in the infant is abundant and has been given by many otologists but most persistently by Gomperz from Politzer's clinic, who for many years studied the rich material afforded by the Kinderkrankeninstitute of Prof. Kassowitz. In 1864 Wreden called attention to the frequent occurrence of pneumonia and otitis media together, and in 1894 Rasch made the astounding statement that 99% of the children that died from bronchopneumonia in the Copenhagen Kommunal-Hospital had a coexistent otitis media.

Gomperz speaks vehemently concerning the extremely large number of cases of otitis occurring with la grippe and says that the latter disease is by far the commonest cause of simultaneous affections of the lungs and ears in infants.

Read before the Academy of Medicine of Cleveland, April 15, 1910.

Measles, whooping-cough, diphtheria, chicken-pox, scarlet fever, gastro-intestinal affections, miliary tuberculosis and brain affections are other common concurrent diseases.

Although Gruber in 1868 affirmed the possibility of inspecting the drum in very young infants, as late as 1889 von Troltch and in 1893 Kossel, expressed themselves as extremely skeptical of this on account of the extreme narrowness of the external canal and the horizontal position of the drum; however modern otologists and especially Hartmann and Gomperz have demonstrated the feasibility of otoscopy in very young infants, provided the use of short specula with extremely small lumina be fortified with much practise and patience; thus Gomperz out of 191 children, in the first weeks of life, was enabled to inspect both drums distinctly in 118 instances; the right drum alone in seven children and the left alone in one new-born.

In 1905, after examining 517 young children in the Klinik of Prof. Kassowitz, Gomperz was able to authoritatively state that otoscopy is only rarely not feasible after the sixth week of life and practically never after the twelfth week. The symptomatology of otitis media is rich, but not peculiar to the disease except in one particular, the pain in the ear; the fever, restlessness, crying and anorexia that commonly accompany the disease are not typical and may be caused by other febrile affections; the tenderness on pulling the tragus is frequently difficult to establish as children often cry as the result of any manipulation; pain as a symptom is only available in older children and in them is often totally absent or else not well localized; I myself saw a case of catarrhal otitis in a boy of 13 years without any pain and L. W. Ladd tells me of a case of double otitis in a child of 12 years with high fever and no pain or tenderness, in whom all symptoms rapidly subsided after paracentesis and the evacuation of a seropurulent effusion.

Diagnosis by exclusion, as advocated by von Troltch, is certainly a precarious method, because of the frequent occurrence of otitis as a concomitant affection. Thus otoscopy seems to be the *sine qua non* for the diagnosis of middle ear disease. The following cases briefly reported will show how valuable otoscopy becomes when employed at least almost routinely, in febrile affections.

Case I. Female child, six months old, when first seen had had a constant fever, between 102° and 104°, for 21 days. The attending physician had zealously examined the child daily with negative findings in the throat, heart, lungs, abdomen, urine, spinal fluid, etc., and several Widal reactions had been negative. The only symptoms evidenced were fever and somnolence. On the twenty-first day just prior to the consultation both drum membranes ruptured and discharged pus, whereupon all symptoms rapidly subsided.

This case shows the considerable length of time otitis may exist in the infant without perforation and also is strikingly significant of the necessity for otoscopy, especially in all cases with uncertain diagnosis.

Case II. Female child four years old had been sick 10 days with high fever from 102° to 104°. The physician in attendance had been discharged because the child progressively became worse despite his daily prediction that "the child would be all right tomorrow." He had given calomel every day and his diagnosis was some gastro-intestinal affection. On the tenth day of the disease the child was very evidently septic; pale and sallow with dark rings under the eyes; marked anorexia and restlessness; rapid thready pulse and occasional vomiting. She made no complaint of pain nor were there any symptoms referable to the ear. Neither the parents nor the physician who had been in attendance had the slightest notion of any ear trouble. The ordinary physical examination was negative but otoscopy revealed the presence of a markedly bulging, opaque, yellow drum in the left ear. The abscess was opened by an otologist and all symptoms subsided within a few hours.

This case again illustrates the point that children, who are old enough, sometimes do not complain of otitis media purulenta and that earlier otoscopy in this case would have saved the child much suffering to say nothing of the economic loss and the danger from mastoditis, meningitis, etc.

Case III. Male child six months old, a well developed, breast-fed, infant, was suddenly taken sick with a high fever, prostration and anexoria. The temperature was 105.5°; on physical examination a slight dulness was elicited at the left apex and a diagnosis of probable pneumonia was made. In the afternoon otoscopy showed the left drum to be markedly reddened and bulging and the presence of otitis being confirmed by an otologist, paracentesis was performed. A seropurulent discharge was followed by a marked improvement in the demeanor of the child and a fall in temperature to 101°. The diagnosis of pneumonia was accordingly dropped. However, in the afternoon of the following day the temperature again rose to 104° and remained high despite the enlarging of the opening in the drum; the other drum was normal. Physical examination of the chest now revealed well marked signs of a lobar pneumonia at the left apex. In Korner's book many such cases were found reported, in which the temperature would drop after paracentesis and in which, upon the subsequent increase in temperature, a pneumonia would be discovered. A common remark in the pediatric clinics of Vienna, on finding only suspicious signs such as slight dulness or slightly sharpened respiratory murmur in the chest of a feverish child, is, "well, if there is nothing in the ear it's a pneumonia." This seems to be a dangerous method in view of the frequency of double infections.

Case IV. Male child, five years old, had an acute lacunar tonsillitis with a temperature between 102° and 104°. Otoscopy proved negative but on the fifth day, the temperature still remaining high and the child being very restless although the tonsils had almost cleared off, the ears were again inspected and the right drum was seen to be much reddened and apparently slightly bulging. There was no pain or tenderness in the ear. In consultation with an otologist it was decided to wait and not perform paracentesis but after two days of high fever and restlessness the ear was opened. A seropurulent discharge occurred with a resultant subsidence of all symptoms.

Case V. A brother of the preceding child, four months old was a robust bottle-fed baby. The mother telephoned me that the child was feverish and had a spoiled stomach; she was accordingly advised to dilute the food and give the child an enema. Two days later she telephoned that the child was all right but that it had a running ear. Two days later she again telephoned that the baby was very sick with a temperature of 104°, that the neighborhood of the ear was swollen and that the baby was in a stupor. With visions of a periostitis or meningitis I hastened to the house. The regional swelling was found to be in the mother's imagination but the baby was evidently very sick with a temperature of 104° and marked stupor. Examination showed the ear to be apparently discharging freely; the other ear was then inspected and to my great relief the drum was found to be reddened, opaque and bulging. Paracentesis was performed by a consulting otologist and in 12 hours the fever and other symptoms had disappeared.

Case VI. Male child, seven months old, a healthy, bottle-fed baby had severe racking cough, restlessness, whining and anorexia, temperature 102.5°. Coarse rales were heard over both bases; the left ear drum was reddened, especialy at the periphery, but the right drum was apparently normal. After four days the rales became much less numerous and the cough almost stopped but the temperature, anorexia and restlessness persisted. In consultation with an otologist it was decided to defer paracentesis, but after five restless, foodless, feverish days the ear drums were opened under anesthesia with the resulting abatement of all symptoms.

Case VII. Female child, eight months old, was very feverish and restless; nose running profusely, mouth wide open; temperature 103°. On inspection of the throat, mucus could be seen streaming down from the nasopharynx; the nasal mucosa was hyperemic and the inferior turbinates swollen. Otoscopy showed both drums to be markedly injected but not bulging. On the second day of the illness the left drum showed signs of bulging and was accordingly incised; the temperature then dropped from 103° to 100° but rose on the following day to 103°. The right drum was then opened and the temperature became normal by the following morning, although the rhinitis and nasopharyngitis kept up for some days.

Case VIII. In a female child 14 months old, cough, fever up to 102°, anorexia, restlessness and constant crying were the symptoms noted. Physical examination showed a few bronchial rales over both lungs, but was not enough to account for the great restlessness and constant crying.

Otoscopy showed both drums to be slightly injected with, however, no bulging. The bronchitis subsided within three days but the fever, anorexia and crying persisted. As the ear drum still showed only slight injection, paracentesis was not performed and the process gradually subsided, the temperature reaching normal in seven days.

This case represents a type of which I have notes of eight similar ones seen this winter, in all of which the otitis subsided within 10 days. The importance of establishing a diagnosis in these cases is considerable because one can then, without anxiety, give anodynes to control the crying of these children.

These few cases cited from private practise illustrate the helpfulness of otoscopy. The sight of a reddened, bulging drum is grateful indeed to the physician, sorely puzzled to explain the high fever and constant crying in a child with apparently only a slight bronchitis or nasopharyngitis. The relief of severe symptoms after paracentesis certainly repays one for the labor and patience necessary to do otoscopy in the very young.

All authors agree that paracentesis is a conservative operation; that it saves the hearing apparatus and diminishes markedly the menace of mastoditis, meningitis, etc., and that paracentesis is possible only after otoscopy.

It is the opinion of the writer that in view of the frequency of otitis media, either alone or accompanying other affections in children, and in view of the severe symptoms, dangerous complications and the damage to the delicate mechanism of the hearing apparatus which its non-recognition entails, it will repay us all to examine the ears not only in all cases of doubtful diagnosis but also in cases in which a diagnosis of pneumonia, grippe, measles or bronchitis, etc., has been established.

328 Osborn Bldg.

Abdominal Section for the Removal of a Gauze Sponge Which Had Been Left in the Abdominal Cavity for Nine Months.

By HUNTER ROBB, M. D., Prof. of Gynecology, Western Reserve University, and Visiting Gynecologist to the Lakeside Hospital, Cleveland, Ohio.

Sponges, forceps and other objects employed during the performance of an abdominal operation have been left in the peritoneal cavity unquestionably more often than statistics would lead us to suppose, inasmuch as we do not know how many patients

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Read before the Lakeside Hospital Medical Society, Feb. 4, 1909.

may have died from a peritonitis from such an accident without any suspicion having been aroused that a sponge or other foreign body was the main etiological factor in the causation of the peritonitis. Crossen of St. Louis has collected from the literature 172 cases in which one or more sponges were lost in the abdominal cavity. This number, as he says, represents undoubtedly a small proportion of the recognized cases, for when such an accident occurs it is only under exceptional circumstances that the source of the trouble is brought to light. The same writer further reports, in all, a list of 240 cases in which a foreign body of some description had been left in the abdominal cavity. In 39 of the 172 cases the accident was recognized only at the postmortem, and of the 172 patients more than a fourth died, and of those who recovered many went through weeks and months of suffering. To the lay mind such an accident seems to be a sin of commission that is absolutely inexcusable, whereas sepsis, heart failure, inflammation of the kidney, shock, or hemorrhage as the cause of a fatal termination, do not produce much adverse criticism. To one familiar with the complications that often have to be met with in even the ordinary abdominal operation, it is easy to understand how a sponge might get lost. Indeed, I would go further and say that during the performance of an operation upon a patient in a septic condition, in which time is an important element, or when hemorrhage or pus have to be dealt with, it is a wonder that this accident does not happen more frequently. Unfortunately in most instances in which this has happened the result is apt to be fatal unless the condition is recognized early, and the abdomen is reopened and drained, before a peritonitis of any moment has begun. Bearing in mind the possibility that such an accident may have taken place, it has become our rule, if the patient's condition on the day following the operation is unsatisfactory and she is undoubtedly getting worse, to reopen the lower angle of the incision under nitrous oxid gas or cocain anesthesia, and to irrigate and drain the pelvic cavity.*

In our case we were fortunate in that the patient returned to us for the second operation. In every instance in which the patient is operated upon by another surgeon for such a condition, he should enjoin the strictest secrecy upon those working with him, and under no circumstances should he allow himself to intimate to the patient or her friends that such a condition was met with. I recall one instance in which an operator suspected that a sponge had been left at a prior operation, and at the time of the second operation he drew a great deal of attention to the fact that his suspicions had been confirmed. As a consequence a suit for malpractice was instituted against the first operator, which caused a great deal of trouble and distress to all concerned.

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*In two instances that I know of this procedure showed the presence of a sponge.

The important question is: By what measures can we, almost beyond peradventure, prevent the occurrence of such an accident, and upon whose shoulders should the blame rest if it does occur? I do not believe that there is any method by which such a possibility can be absolutely excluded. Our plan is to have a certain number of sponges put up in a package. This is done by the head nurse, and the number of sponges contained is marked on the outside of the package. In addition to this, to each sponge is attached a tape, and as soon as a sponge is placed in the abdominal cavity this tape is at once caught up in a small pair of hemostatic forceps, either by the first assistant or myself. In addition to this the head nurse always counts the sponges before the abdominal cavity is closed. Sometimes I have found that the nurse has made a mistake in the number of sponges that she thought she had in a given package, or she has made an incorrect count after opening the package and placing the sponges on the table. At times, just before the patient's abdomen was closed the nurse has reported that a sponge was missing, but owing to the fact that the first assistant or myself had caught each sponge with a pair of forceps as the sponge was placed in the abdominal cavity, and as the pelvic cavity was apparently free from any sponge, we have closed the abdomen. This has happened frequently enough to make me feel doubtful about the advisability of relying upon the count of the sponges alone. Again, owing to the way that surgical work has to be performed in most of our hospitals it is impossible to have always the same person or a responsible person delegated to look after the sponges, and for this reason errors are bound to creep in. I have always felt that after an operator has surrounded himself by the best help that he is able to command, he has protected the patient to the best of his ability.

The report of our case is briefly as follows:

The patient was admitted to the Lakeside Hospital in May, 1908, complaining of dysmenorrhea, menorrhagia, and dragging pains in the lower abdomen, with frequent and burning micturition. On bimanual examination an adherent uterus could be made out posteriorly in the pelvis. Both Fallopian tubes and ovaries were enlarged and adherent. Three days after admission to the hospital an abdominal section was performed. The adherent tubes and ovaries were removed after separation of a considerable number of intestinal and omental adhesions. Both tubes contained pus. During removal of the right tube and ovary the tube ruptured, allowing several drams of a purulent fluid to escape into the pelvic cavity. The pus was caught on a sponge and a couple of narrow gauze sponges were packed about the seat of the ruptured tube. The abdominal cavity was closed without drainage. There was a slight elevation of temperature for two days following the operation. Aside from this, however, the convalescence was uninterrupted. Twenty days after the section the cervix and perineum were repaired. Six weeks after the laparotomy the patient was discharged feeling well in every way. In February, 1909, a little more than nine months from the time of the operation, she was again admitted to the Lakeside Hospital complaining of some distress in the left lower quadrant of the abdomen. On bimanual examination a fluctuant movable mass, about the size of the closed fist, could be made out. Three days later the abdominal cavity was reopened through the line of the previous operation. The mass was found beneath the brim of the pelvis lying to the left of the median line, enveloped in a connective-tissue-like sac, and surrounded by the sigmoid flexure, the omentum, and several coils of the small intestines. During an attempt to separate the intestines from the mass the sac ruptured and a small quantity of a purulent looking fluid escaped. At the mouth of the opening in the sac there appeared a whitish substance which proved to be a gauze sponge, in a perfect state of preservation. After separation of the intestines and the omentum, the sac was removed. The uterus was then separated from the adhesions which bound it down to the pelvic floor posteriorly. At the right cornu of the uterus there was a small cystic mass which was removed. The abdomen was closed in the usual manner and the patient made an uninterrupted convalescence. Aside from the facts that have been mentioned already, the points of special interest would seem to be: (1) the slight disturbance which followed the first operation as shown by the practically normal convalescence; (2) the tolerance of the peritoneum for such a large foreign body; (3) the fewness of the really important symptoms which made the operation necessary nine months after the original abdominal operation.

702 Rose Bldg.

Foreign Body in the Larynx, Report of a Case.

By S. H. MONSON, M. D., Cleveland.

The importance of a foreign body in the larynx depends upon the size, shape and substance of the object and also upon its point of lodgment. Fatal asphyxia may follow the inspira-

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Read before the Ophthalmological and Oto-Laryngological Section of the Academy of Medicine of Cleveland, February 25, 1910.

tion of a very large body, whereas a small sharp-pointed object like a fish-bone or a piece of glass may not interfere seriously with the air current. Almost any object that the mouth can hold is liable to be drawn into or toward the glottis so as to impede respiration. Children, particularly, have a fashion of putting everything in the mouth, whence in deep inspiration preceding laughing or coughing, there is danger of the foreign body being sucked into the lower air tract. As a rule, the diagnosis of a foreign body in the larynx or in its continuation is not difficult. In the absence of any history, we have no means of definitely determining the presence of a foreign body in the lower air passages except by the use of the x-ray, or, in those cases in which its lodgment is in the larynx or trachea, when it is brought under ocular inspection by the use of the bronchoscope.

The symptoms of foreign body in the respiratory passages are those of obstructed breathing, and laryngeal, tracheal, bronchial or pulmonary irritation and inflammation. The patient is seized with a violent choking and suffocative attack, characterized by cyanosis, aphonia and a weak pulse. These symptoms usually subside within a few minutes to return again in a few hours or days. After the foreign body remains in the larynx for several weeks the spasmodic symptoms cease and the cough and hoarseness become more constant, often leading to a diagnosis of tuberculosis. When the foreign body changes its position, or a fresh irritation arises, new suffocative attacks are excited. It is remarkable how long a time a foreign body, even of large dimensions under some circumstances, may be retained in the larynx without producing much disturbance or its presence being suspected. Knight reported a case in which a tooth-plate fell into the larynx during a puerperal convulsion and was not discovered until a week later, when the patient complained of sore throat. Lennox Browne recorded a case in which a plate of artificial teeth was impacted in the larynx 22 months before it was recognized. Langmaid once removed a pin from the larynx two years after it had been inhaled, hoarseness being the only symptom in the meantime. Franchere mentions the case of a child, two and one-half years old, who had a safety-pin lodged in the larynx for six months, aphonia being the only symptom. Friedberg reports a case of a girl, 12 years of age, in whom there was an eyelet lodged in the larynx for two and one-half years, hoarseness being the only symptom.

The following case is of interest on account of the inability to make a definite diagnosis at the time and also the length of time which elapsed before dyspnea occurred.

On Monday, December 13, 1909, A. H., aged six months, was referred from the Babies' Dispensary and Hospital to the Charity Hospital Dispensary by Dr R. A. Bolt. The history was, that for the last three months the mother had noticed that the child had a little difficulty in breathing, especially at night, and also a slight cough. Dr Bolt had made a thorough physical examination, which was negative except for a slight bronchitis, and referred the baby to me for an examination of the nose and throat. The baby was well-developed and well-nourished and, when I saw her, did not appear to be having any difficulty in breathing. Examination of the nose and pharynx revealed nothing pathologic, but on digital examination a mass of adenoids could be felt in the nasopharynx completely closing the posterior nares. By means of a small Gottstein curette and without an anesthetic, a mass of adenoid tissue was removed. There was no reaction, and the child was apparently well until the following Friday when the parents noticed that the baby had a great deal of difficulty in breathing. The next day the breathing becoming still more labored, they returned with the child to the Babies' Dispensary and I was called. There was now marked inspiratory dyspnea with retraction of the supraclavicular and epigastric regions. Nothing could be made out in the lungs and the temperature was normal. The possibility of the child's having a foreign body in the larynx was considered, but the parents were very positive in their assertion that the baby had been carefully watched and could not have anything in the larynx. Laryngismus stridulus was also ruled out; the child was well-developed, there were no signs of rickets, the dyspnea had been gradually increasing and had not been spasmodic in character. From the history of difficult breathing for the last three months a diagnosis was made of growth in the larynx, most probably a papilloma which had gradually increased in size until the larynx had become occluded. The pulse was weak and rapid and the baby was fast becoming exhausted, uttering only a faint cry occasionally. On account of the condition of the child we determined to do a tracheotomy and later investigate the condition of the larnyx and trachea by direct laryngoscopy.

The baby was transferred to Charity Hospital and I performed a low tracheotomy under chloroform anesthesia. As soon as the tube was introduced into the trachea, the dyspnea was relieved and the breathing became regular and deep. No obstruction of the trachea could be felt at the time of the operation. From that time breathing was unobstructed, but within 12 hours the temperature was 101° F. and all the signs of a bronchopneumonia were present. The temperature rose in the next few hours to 103° and remained around that point until the baby died on December 22, 1909.

Dr Bolt, at autopsy, removed the trachea and larynx, and the following is his report: On opening the larynx and trachea, there was found a piece of metallic substance, somewhat resembling tinfoil, blocking up the trachea just above the first cartilaginous ring and extending up to the level of the cricoid. This was embedded in the mucous membrane and was quite difficult to dislodge; its surface was somewhat eroded, showing that it had been there some time.

On questioning the father more closely afterwards, he recalled that about three months previously the parents thought the baby had swallowed a piece of gum and a physician was hastily summoned. Upon his arrival, the child appeared to be in a normal state, and he told them the baby was all right and as the baby appeared to suffer no bad effects from it, the incident was soon forgotten.

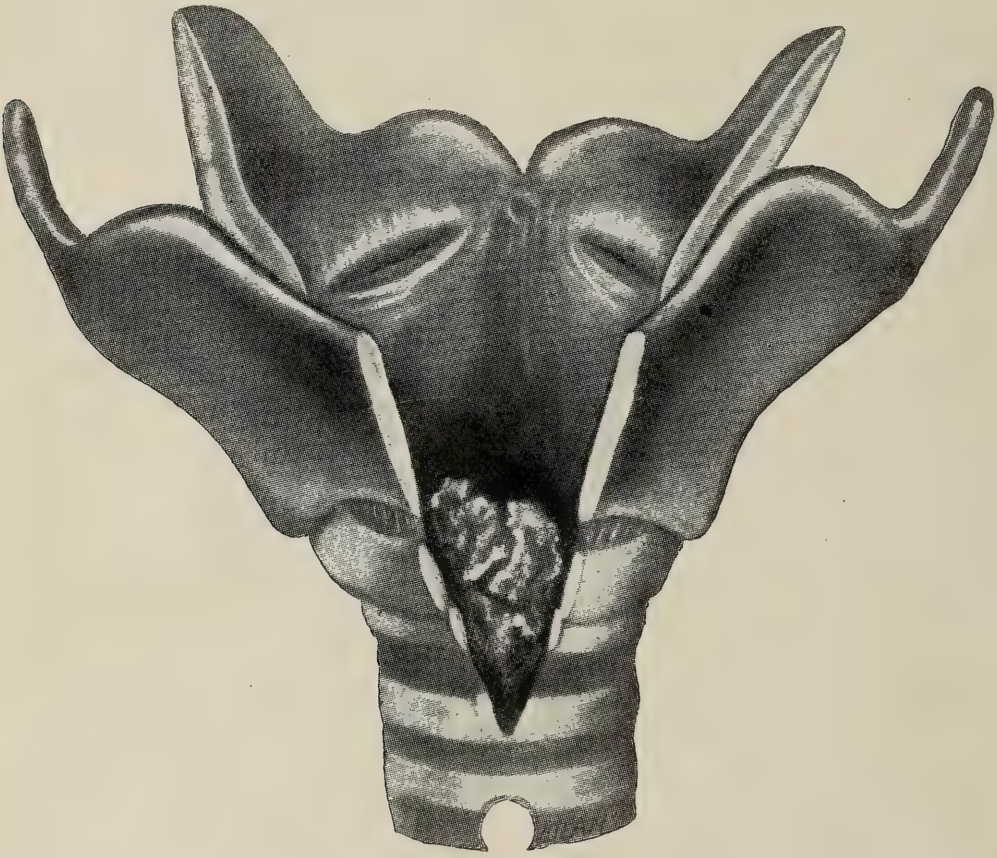

Fig. 1. Larynx, showing foreign body at the level of the cricoid. The tracheotomy opening is seen at the lower margin of the specimen.

An x-ray examination, or an examination with the bronchoscope, would undoubtedly have revealed the nature of the obstruction. The marked dyspnea and the weak state of the child, however, necessitated an immediate tracheotomy.

After the development of the bronchopneumonia, further examination was inadvisable. However, even a definite diagnosis of foreign body in the larynx and its accurate location with the x-ray would not, I believe, have caused us, under the circumstances, to adopt any other method of procedure.

466 Lennox Bldg.

Observations on the Coagulation Time of the Blood in a Case of Phlegmasia Alba Dolens and its Treatment.

By P. Á. JACOBS, M. D., Cleveland.

The condition which caused me to carry on this investigation, was the marked rapidity of the coagulation of the blood noted while attempting to make a blood culture for diagnosis and subsequent vaccine therapy in a case of phlegmasia alba dolens occuring during the puerperal period.

Mrs. A. M., age 36, was seen in consultation with Dr M. H. Castle on Sept. 19, 1909. About six years ago, during childbirth, the patient was badly lacerated for which she was operated upon about a year later. On Aug. 14, 1909, she gave birth to a child at full term. Labor was normal and lasted about six hours. On the fourth day after labor the patient was moved from the second to the third floor of the hospital. She then complained of pain in the lower part of the abdomen, but had no fever. She left the hospital on Aug. 26 (12 days after labor). On this day the left breast was painful and the glands in the left axilla were enlarged and tender; an ice bag was applied and the symptoms subsided within 24 hours. Fourteen days after labor she complained of pain in the left hip and leg: the region of the femoral vessels was painful and tender, but no swelling of the limb was noticed. Three days later the left leg became enormously swollen and painful. The temperature was 100 to 100.4° F., pulse 100 to 110.

The limb was elevated and wrapped in cotton after having equal parts of iodin and glycerin applied; opiates were given to relieve the pain which was excruciating. Meteorism was a pronounced symptom and was relieved by hot turpentine stupes, enemata and the use of a rectal tube occasionally.

During the next 14 days there was slight improvement in the symptoms, but the swelling in the limb persisted. On Sept. 15 (32 days after labor) the right leg became swollen.

The physical examination showed that the patient was anemic. She had an anxious facial expression and both lower limbs were enormously swollen. Examination of the lungs revealed no abnormalities; the heart boundaries were normal and no abnormal sounds were heard. Abdomen not distended, no ascites, no tenderness over the region of the stomach, gall-bladder, or appendix. Slight amount of tenderness in the right and left inguinal regions. Examination of the pelvic organs per vaginam was not attempted on account of the enormous swelling in both limbs which were painful and stiff. The temperature was 100.4° F., pulse 102.

Ten c. c. of blood were withdrawn from the median basilic vein for bacteriologic examination, but before I could fill all the culture tubes,

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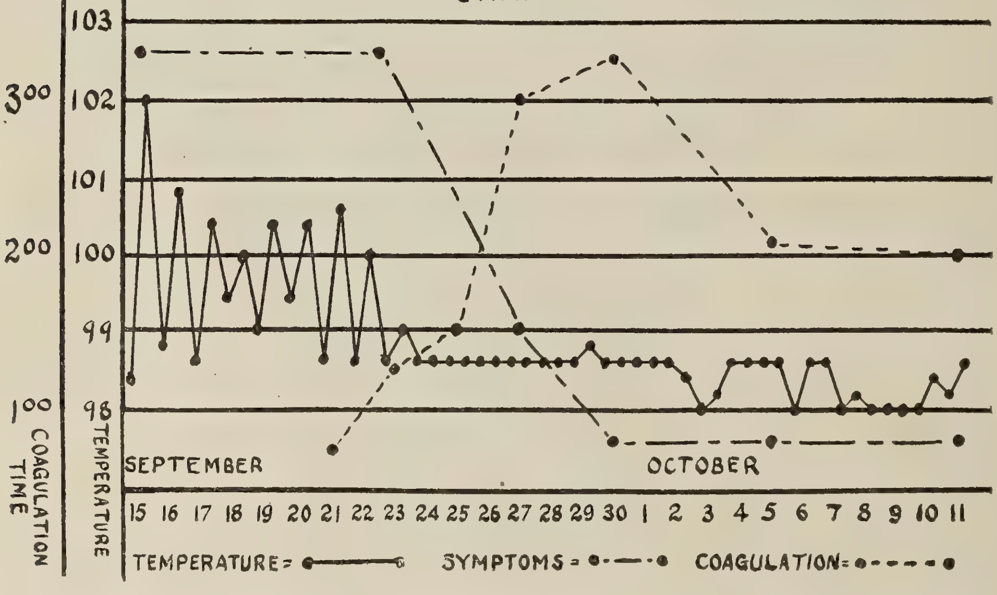
the blood had begun to clot; so much so, that the remaining five c. c. of blood could not be expelled from the syringe.

The next day the patient's condition was about the same; pulse 92, temperature 99.4 to 100.4°. Another blood culture was made and this time two c. c. of a 1.5% sterile solution of sodium citrate was first aspirated into the syringe to prevent coagulation.

On Sept. 21, the blood culture was negative. The patient's condition was about the same, temperature 98.6 to 100.6° and pulse 98. Recalling the rapid coagulation of the blood, and finding that the blood was sterile, I decided to determine the coagulation time of the blood, the technic of which will be described later. The result was that the blood coagulated in 45 seconds; the normal average being one minute, 45 seconds. The coagulation time of the control was one minute, 50 seconds.

From these findings, I decided to administer citric acid internally for the purpose of diminishing the coagulability of the blood, and thereby preventing the further formation of thrombosis, and possibly hastening the dissolution of the already-formed thrombus. I therefore prescribed one dram of citric acid, dissolved in a glass of water, three times a day.

CHART-1



This shows the increase in the coagulation time of the blood and a concomitant drop in the temperature and improvement in the symptoms.

On Sept. 23, the patient felt much better; swelling reduced as far as the left knee after five doses of citric acid; temperature 98.6 to 99°; pulse 80; coagulation time of the blood one minute, 15 seconds.

On Sept. 25, the swelling was reduced above the left knee and above the right ankle; left thigh not so tense; temperature 98.6°; pulse 82; coagulation time of the blood one minute, 30 seconds.

On Sept. 27, the swelling was completely reduced on the left side and up to the knee on the right side; temperature 98.6°; pulse 80; coagulation time of the blood three minutes, 30 seconds.

On Sept. 30, the swelling was completely reduced in both limbs, patient sitting up in bed; citric acid discontinued; temperature 98.6°; pulse 76; coagulation time of the blood three minutes, 45 seconds.

On Oct. 5, the patient had been sitting in a chair most of the time during the last three days; had some pain in the joints and the lower extremities became swollen towards evening; temperature 98 to 98.6°; pulse 80; coagulation time of the blood two minutes, five seconds.

On Oct. 9, patient walked with difficulty on account of stiffness and slight amount of pain in the joints. The temperature was 98 to 98.4°; pulse 85.

On Oct. 11, the temperature was 98°; pulse 82; coagulation time of the blood two minutes.

The technic used for the determination of the coagulation time of the blood was the same as that employed in Sir A. E. Wright's laboratory. For this procedure a special pipette is required. To make this, a piece of glass tubing of about five mm. diameter is drawn out into a fine capillary (Chart 2, fig. A). By means of an automatic pipette, five c. mm. of mercury are introduced into the tube at one of the ends which has not been drawn out; the mercury is run along the capillary tube, and at each place where the column just extends from one to the other end of two marks placed exactly five cm. apart on the bench, the extremities are marked. These portions of the tube are severed; leaving several cm. of the tube to spare beyond each mark. At a point about one cm. from the mark, the capillary is throttled (Chart 2, fig. B). The throttled end of the capillary is now fixed into a stump by means of sealing wax (Chart 2, fig. C), and enough mercury is aspirated into the pipette to fill that portion of the capillary between the throttle and the proximal mark; the mercury is now run down so that its proximal end coincides with the distal mark and the tube is severed at a point which coincides with the distal extremity of the column of mercury. In this way the two distal portions of the tube will be of the same capacity (Chart 2, fig. C).

CHART — 2

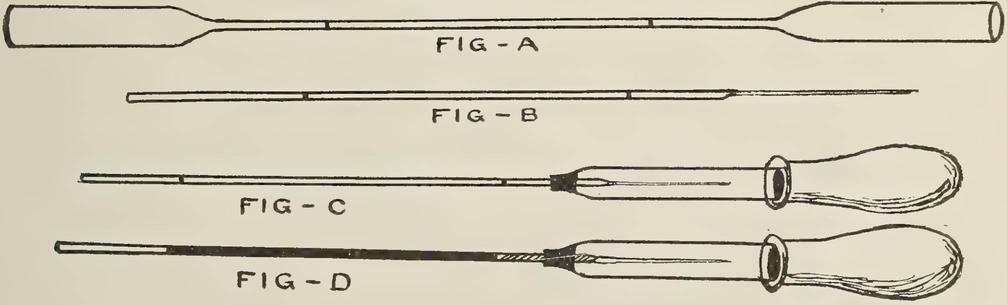


FIG — A

FIG — B

FIG — C

FIG — D

Enough mercury to fill the tube up to the distal mark is now aspirated and the tube is ready for use. The finger having been pricked, the pipette is applied to the drop of blood. The column of mercury is now allowed to run up the tube by relaxing the teat until its proximal end coincides with the proximal mark on the pipette. The pipette is then removed from the drop of blood and the mercury allowed to run up the pipette until stopped by the throttle.

The five cm. length of the pipette will now be occupied by a column of blood of five c. mm. volume; the proximal extremity will contain a volume of mercury; while the distal extremity will contain an equal volume of air (Chart 2, fig. D).

The pipette and contents are, without loss of time, placed in the water bath or an opsonic incubator at a temperature of 37° C. After the expiration of two minutes the pipette is removed from the incubator and, if clotting is not complete, the contents are blown out on some blotting paper. If a clot has formed the process must be repeated with a new pipette, allowing it to remain in the incubator one minute and 30 seconds. If, however, no clot has formed in two minutes, the process is likewise repeated and the pipette left in the incubator two minutes and 30 seconds. By repeating the process in this way, it should always be possible to get within five seconds of the coagulation time of the blood in question, without using more than four or five pipettes.

The coagulation time of the blood is taken as the time at the expiration of which, coagulation just commences, and is determined by noting whether, on blowing out the column of blood on the blotting paper, any non-fluid portion is left in the center of the circular patch which the blood will make on the blotting paper.

This case serves to illustrate very clearly the therapeutic effect that was obtained as a result of the administration of citric acid, with the object of reducing the coagulability of the blood and thereby preventing the further formation of thrombosis and hastening, as it did in this case, the dissolution of the already formed clot, which seemed to be getting larger before the administration of citric acid.

664 Rose Bldg.

Spinal Anesthesia.

By M. E. BLAHD, M. D., Cleveland.

Spinal anesthesia, just as all other medical discoveries, has met and is still meeting with the opposition of a vast number of medical authorities, who, judging from *a priori* conclusions, condemn this new method as absolutely useless and of no worth. Especially is this condition true in the United States, where spinal anesthesia has never been given a thorough trial. It is hardly fair to condemn this procedure on account of hasty conclusions, drawn from a few demonstrations of this method, by some of our much-advertised foreign colleagues, or much less on account of a few deaths, which have occurred in this country from the use of stovain in inexperienced hands.

It is not my purpose, in this short dissertation, to argue for or against spinal anesthesia, but rather to put the facts before you as they appear today and let you form your own conclusions.

Although the discovery of spinal anesthesia is generally attributed to Bier, who almost became a martyr to science by having cocain injected into his own spinal canal, nevertheless it seems to me, that a portion of the glory belongs to Corning of New York City, who seven years before Bier (that is in 1885) published a monograph on spinal anesthesia and local medication of the cord.

The first drug used in the production of spinal anesthesia was cocain, but it was found to be very dangerous, and on account of this, spinal anesthesia was almost abandoned for several years. Not until the discovery of stovain, novocain, and tropacocain did spinal anesthesia rest on a firm basis. These drugs greatly resemble cocain and have a very similar action, with the exception that the dangerous qualities of the latter are eliminated. They are only one-third to one-half as toxic as cocain, and instead of depressing the heart, have a tonic action upon it. The following remarks will be based upon the use of stovain.

The technic, although very simple, is, nevertheless, the most important feature for the production of a successful anesthesia. The unreliability of its action is not, as has been supposed, due to an idiosyncrasy of the patient to the drug, but as has been shown experimentally by Donitz, due to a faulty technic. A Record's or Pravatz syringe, having a needle with a sharp rounded

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point, is used for the injection. The injection is preferably performed between the twelfth dorsal and first lumbar vertebrae. The patient is seated upon the edge of the table with head, neck and thorax bent well forward. This position increases the space between the vertebrae and makes the puncture comparatively easy. In nervous patients the injection can be performed with the patient lying on the side and assuming the usual position for lumbar puncture. The amount of stovain injected depends upon the character of the operation and the age of the patient. The following doses are given:

In children from	1 to 5	2 to 3 cgm.
In children from	5 to 15	4 to 6 cgm.
In adolescents	15 to 20	6 to 10 cgm.
In adults		10 cgm.

The above doses should be varied according to the nature of the operation and the individual.

The fluid should be injected very slowly, so as not to change the intradural pressure too suddenly. The needle must be inserted in the median line, in order to be sure to reach the central canal of the cord, as punctures to the right or left of the median line are the cause of one-sided anesthesias, or even the absolute lack of any loss of feeling.

A patient in Bier's clinic demonstrated this fact very clearly. This patient was subjected to spinal anesthesia upon three distinct occasions. The first time the puncture was made to the right of the median line, and only the normal leg became anesthetic, while the other leg upon which the operation was to be performed was just as sensitive as before. The second time the puncture was again made to the right of the median line and again in only the normal leg was there an absolute loss of feeling, while the other leg was still very sensitive. The third time the puncture was performed in the median line and a symmetrical anesthesia of both limbs resulted. That the cause of these one-sided anesthesias was due to the needle entering the canal laterally from the median line was experimentally demonstrated by Donitz. He injected a red-colored fluid into the spinal canal of a cadaver, the needle entering the canal laterally from the median line. A coloring resulted of that part of the spinal cord nearest to the side injected, while the remainder of the cord retained its normal appearance. When the injection was performed in the median line a symmetrical coloring of that entire portion of the cord was observed. This is easily explained, when the anatomy of the lower portion of the spinal cord is taken into consideration. The cauda equina, unlike the other parts of the cord, is formed by a great number of nerve bundles, which enclose between them a number of vertical canals. If the needle enters one of these canals it can readily be seen that the fluid cannot spread throughout the entire thickness of the cord, but must gravitate along one of these lateral canals, whereas if the fluid enters the central canal, which can be accomplished only by a median puncture, it must spread throughout the entire thickness of the cord. In those patients in whom it has been impossible to obtain anesthesia, the needle at the time of the injection could not have been in the subarachnoid space. For even if the spinal fluid ran freely at the time of the puncture, it is quite possible for the point of the needle to slip out before the injection is made. This was clearly shown by patients of Jenesco, upon whom it was necessary to perform three or four injections before anesthesia was effected. If every one of these injections had gone into the subarachnoid space, the patient would certainly have had a severe case of strychnin poisoning, as the three injections contained more than a fatal dose of the drug.

When a complete anesthesia is obtained a paralysis of the sensory as well as the motor nerves results, but it is quite possible for a patient to have a complete loss of feeling without any disturbances of his motor functions, even being able to walk back to his bed after a short operation. During the operation the patient retains complete consciousness, and is often heard to joke with the operator or his assistants. The method of controlling the height of the anesthesia depends upon the kind of anesthetizing fluid in use. If the specific gravity of the fluid is heavier than that of the spinal fluid, as is used by Barker, the natural curves of the spinal column are depended upon to regulate the height of the anesthesia, whereas, if the specific gravity of the injection fluid is lighter than that of the spinal fluid, a high anesthesia can be obtained by using a larger amount of stovain, placing the patient in the Trendelenburg position and lowering the blood-pressure, to accomplish which Donitz has recommended a very ingenious method. Anesthesia above the umbilicus is considered by most surgeons to be dangerous, and is used only by a very few. Jenesco claims to successfully anesthetize the head, neck, arms and thorax by the injection of stovain and strychnin into the cervical region of the cord. This procedure, although not as yet given a thorough trial, seems very dangerous on account of the anesthetic action upon the respiratory and vasomotor centers in the medulla.

The complications from stovain, although given much prominence in the arguments against spinal anesthesia, are not nearly as important as at first thought they appear to be. First of all, deaths from this procedure have been very rare and, in fact, are not more frequent than they are in ether or chloroform anesthesia. This is substantiated by statistics from the various clinics. Headache, although a very frequent complication, is quite annoying, but not serious, and has become much less frequent since smaller doses of stovain are used.

Nausea is now an infrequent occurrence. Stoppage of respiration, syncope and pallor occur only in head and neck anesthesias, and this has already been branded as very dangerous. Although pallor does occur at times, in very rare cases, in low anesthesias it is not of a serious nature and does no harm. The pulse sometimes becomes rapid, but as a rule remains normal. As regards permanent motor paralysis, it has not occurred in a series of almost 5,000 cases which I have collected from the literature. In the few cases in which it did occur, stovain has been in inexperienced hands and probably the paralysis was due to an overdose. It has never occurred in any of the large European clinics. I have been unable to find any cases of necrosis of the cord.

The field of application of spinal anesthesia at the present time seems to be rather limited, but nevertheless it is the opinion of a great many surgeons that it has a very important mission to fill, that is, to allow painless operations upon patients in whom an inhalation anesthesia is contraindicated. Of these there are very many; to briefly enumerate them, the most important conditions seem to be pulmonary diseases, cardiac diseases, old age—a class of patients in whom stovain acts particularly well, shock, diabetes, etc. The reports of some clinics show that stovain does not act well in nephritics, but then on the other hand there are many contradictory reports which show just the opposite. Before closing I wish to quote a few statistics which I think are rather impressive. The following authors report as follows:

Barker	300	cases,	with	0	deaths,	no	paralysis
Ohler of Hamburg	1,000	"	"	1	"	"	"
Bier	1,000	"	"	1	"	"	"
Jenesco	1,015	"	"	0	"	"	"
Konig of Freiburg	1,000	"	"	2	"	"	"
Miller	360	"	"	0	"	"	"
Becker	135	"	"	0	"	"	"
Roith of Heidelberg	100	"	"	0	"	"	"
James Israel	50	"	"	0	"	"	"

Making in all 4,960 cases with five deaths and no cases of parmanent paralysis. This includes cases in which lumbar anesthesia was used while still in its infancy and when the technic was very crude. Of the deaths, two are directly due to an overdose, according to the reports of Bier and Konig. Ohler's case was due to septic meningitis in a patient suffering from puerperal sepsis. In the case of Miller and in Konig's other case the cause of death could not be ascertained with absolute certainty. The same clinics have not had a death from lumbar anesthesia in two years. My own personal observations comprise a series of about 40 cases. In Professor Boeckel's clinic at Strassberg, although headache was a rather frequent occurrence, in only one case was it extremely severe and then it lasted for about 48 hours.

We had no cases of collapse or any other alarming symptoms. Tingling in the limbs seemed to be the most annoying complication. In two cases it was necessary to use chloroform to complete the operation. In one of these we were unable to secure the spinal fluid, and the needle, in all probability, did not enter the central canal. The other was a case of a very nervous woman in whom the attempt was made to remove the gall-bladder, but the anesthesia did not reach quite high enough. Barker, in his last 150 cases, reports no failures.

What the future of the spinal anesthesia will be time only will tell. But this much is certain, that in selected cases it is a great aid to surgery and that many patients can be saved by a judicious and sane employment of this adjunct.

325 Osborn Bldg.

What is Orthopedic Surgery?

By HENRY O. FEISS, M. D., Cleveland.

The difference between general practise and a specialty is in many cases simply a difference in degree. Practically, every physician regulates his practise according to his peculiar skill and knowledge. He does this unconsciously in a measure, being governed more or less by his own inclination, and if he looks back upon his life-work, he will have found that he has adapted himself to certain kinds of work more than to others, and that he is able to do those kinds of work better than other kinds.

It is this natural segregation of ideas which has made his work most interesting. He who has not done so, who has not devoted himself to special things nor ever attempted to concentrate his time and efforts on closely related problems may, perchance, have had a useful and interesting life's work, but not one which can have given him the same satisfaction as could have been afforded by the pursuit of a specialty. In the one case, his work has been more or less confused and variegated; in the other, he has tended toward expert knowledge. If, therefore, a man thinks he recognizes his own qualifications and predilections and chooses to devote himself exclusively to one line of work, there can be no criticism attached whether he does so early or late in life. That he must have a good working knowledge of general medicine before he specializes is to be admitted, but that he should spend the best years of his life in a confused mass of work of which only a small part interests him, is far-fetched. The best specialist is he who has become so in the prime of his life.

If one glances over the work of any prominent surgeon or physician of this country or any other country, he will find that the tendency of his writings and his work has been more or less along well-defined lines. Some have been more versatile than others, but the prominence that a man receives is, as a rule, not due to the broadness of his knowledge but to the excellency of the contributions he has made in a small and concentrated field. His work has usually been useful in direct proportion to the depth with which his researches have explored that field. The modern books in surgery and medicine which are most instructive and broadest in their scope are those composed not by one man, but by a large group of well-known men, each one taking the part of the subject in which he is most expert.

The development of specialties in medicine is relatively recent. This is due to the fact that it is only in recent years that a great advance in medicine has been made. A hundred years ago there were scarcely any specialties, but as the years passed, the field of labor broadened and men began to divide their researches and limited their efforts more and more to particular things. The pathologist separated from the clinician and the surgeon from the internist. In the schools, a division was made between anatomy, physiology and pathology, and later still, chemistry, histology and bacteriology were further distinguished. Clinically, as time passed, certain men devoted themselves exclusively to the eye, and to the oral and nasal passages. Still more recently, others have devoted themselves exclusively to neurology, dermatology, legal medicine, pediatrics and gynecology; and so the branching from the mother trunk of medicine has continued and will continue as long as growth is maintained.

Orthopedic surgery is still another branch from the main trunk and is just as much a specialty as any of the other specialties. It is not even the latest specialty. In the last few years Roentgenology has sprung up and is destined to become of the greatest importance. Therefore as time goes on, new specialties must and will develop. There will be no end and the more specialties there are, the more advanced our knowledge will become. Auguste Comte the great French philosopher, in speaking of science says, "It is owing to this division of employment and concentration of whole minds upon a single department, that science has made so prodigious an advance in modern times." The same holds for medicine.

I make these remarks with only one thing in mind, to answer the arguments of those who say there are too many specialties. That is a vast mistake. There are not enough specialties and the history of medicine of the last fifty years is pregnant proof of my statement.

Therefore, whether orthopedic surgery has a right to exist requires no further consideration. It may be interesting, however, to state the reason that orthopedic surgery does exist. This peculiar branch developed at the beginning of a mechanical age. The middle of the last century showed marked changes in the mechanical arts. We may note the invention of the cotton-gin, the steam-engine, the telegraph and hundreds of other things. Great strides were made in coping with engineering problems which had heretofore seemed impossible of solution. The Suez Canal was constructed, the Atlantic Cable was laid, the Brooklyn Bridge was erected. All these things were manifestations of the mechanical tendency of those times. In medicine there was a reflection of this mechanical tendency. Physicians undertook to cope with mechanical forces in the human body heretofore unchallenged, and the natural impulse was the study of those forces which controlled its external form and locomotive functions. In this fashion orthopedic surgery sprang up. It was not an artificial creation of a man or a group of men, it was the natural evolvement and a necessary growth in a mechanical age.

Orthopedic surgery, to use the simplest and broadest expression, is the study and treatment of cripples. It has primarily two motives—the correction of deformity and the improvement of function. It has less to do with health in the ordinary sense of the word than other branches of medicine. It is, as I have said, for the most part mechanical. General surgery is also mechanical, but the difference between the mechanics of general surgery and the mechanics of orthopedic surgery is that in the former case the surgeon's task is almost completed after he has done the operation: in the latter case his task is just begun. The orthopedic surgeon sees his case, if necessary operates, and continues the observation and treatment of that case for a good part of the patient's life. Weeks and months may mean nothing in the treatment of a given case. It is a question of years. From one point of view, this is discouraging, but on the other hand, there is this satisfaction, the work that the orthopedic surgeon does is, as a rule, manifest to the patient. In the other specialties the physician works upon the interior of the body and the only knowledge of improvement that the patient has are his subjective symptoms or the word of the doctor. In orthopedic surgery, the work is external and the patient sees the result of the work himself. There can be no delusion. The best argument and the only argument that he needs to show the improvement is to ask the patient to look for himself.

Broadly speaking, orthopedic surgery deals with nine classes of deformities—rachitic, tuberculous, arthritic, paralytic, old traumatic, static, congenital, costume deformities and a group of miscellaneous deformities. The advance that has been made has been especially marked along such lines as the rachitic, congenital, tuberculous and paralytic. There is no longer any reason for a club-foot to be seen in an adult. There is almost no excuse for a hip to be seen in a permanent position of flexion or adduction. There is scarcely any excuse, except in rare instances, for a hunchback. These things are subject to such treatment as will prevent radical change in form. There are plenty of deformities which exist today and which could have been prevented if they had been properly handled at the proper time. Even of such deformities as have developed, many are subject to improvement and cure if the patient or the general practitioner only took sufficient interest to look up the matter. I have seen persons walk along the street with their limbs twisted in such a way that every move was painful and whom a slight operation could have made almost as normal as other people. I have seen children growing up with marked deformities and being treated with wretched tin braces made in stores which had no further purpose than to give extra weight to the child, doing more harm than good. It is not to be denied that there are certain things that are not amenable to treatment, for example, severe scoliosis or severe infantile paralysis. We are working on these things and in many types of infantile paralysis, the improvement that can be gained is very satisfactory. In this and other things it becomes the duty of the parents and the family doctor to see that the child gets the benefit of sound advice and proper treatment.

But I am not attempting to make a plea to have these cases treated. I had rather assume that the cases are being, and will be treated, but I insist that such treatment must be carried out according to definite and logical rules and by those who are skilled and expert in that kind of work. The orthopedic surgeon may or may not be the best man to do this work. Certainly, it is his aim to add his concentrated efforts and specific knowledge to this kind of work. He does not insist that he is the only one who can do it, but he does insist that those who are doing it, do it properly.

The stage of experiment is almost passed and much of our knowledge is based on clear mechanical principles. The mastering of these principles and their application to the human form have been the crowning glory of orthopedic surgery.

418 Lennox Bldg.

A Case of Cervical Rib with Operation.

By C. A. HAMANN, M. D., Cleveland.

Cases of cervical ribs, as is now well known, are not extremely rare and in routine physical examinations they are recognized by many careful clinicians. In only a small proportion of instances do they give rise to symptoms; the case recorded below is an example of the group in which symptoms were present, were cured by operation and the unusual anatomical finding of a bursa surrounding the subclavian artery as it crossed the abnormal rib added interest to the case. It is therefore deemed worthy of publication. The pathological anatomy, symptomatology and treatment have been fully discussed recently by Thorburn (*Med. Chirurg. Soc. Transact.* 1905), Jones (*Quar. Journ. of Med.* Vol. I) and Keen (*Amer. Journ. Med. Sci.* Vol. CXXXIII, p. 173). Keen found 43 cases that had been operated on; all recovered.

The patient, a woman aged 45 yrs., referred by Dr C. S. Hoover, of Alliance, O., presented nothing in her family history, or in her personal history prior to the onset of the symptoms for which she consulted her physician that had any bearing on the condition found. About one year prior to my seeing her she began to have "neuralgic pain" in the right side of the neck, which after five weeks began to extend down the arm to the ends of the fingers; this pain continued to the time of operation. At about the time of the beginning of the pain she had an attack of influenza. Massage at times seemed to lessen the pain. A few months ago it was noticed that she had no radial pulse on the right side, and about six weeks before my examination the tip of the index finger began to become gangrenous; a diagnosis of thrombosis of the axillary artery had been made by her physician.

She was fairly well nourished but looked worn and exhausted, no doubt as the result of the severe pain from which she was suffering.

The rather characteristic history together with the gangrene of the tip of the finger led at once to the suspicion of the presence of a cervical rib, and upon exposing the neck a distinct prominence could be seen in the supraclavicular fossa, and the pulsation of the subclavian artery could be detected. A cervical rib could be distinctly palpated, and over it lay the subclavian artery; pressure on the vessel and on the rib caused pain. Raising the arm lessened the pain. There was no pulsation below the subclavian and the hand was cold, though no peculiar vasomotor disturbances existed. There was some atrophy of the forearm muscles, particularly on the ulnar side. The tip of the index finger was gangrenous, and the ends of the middle and ring fingers looked as though gangrene was imminent. The ends of these three fingers were extremely tender to the touch; there was no paralysis. A radiograph showed a long cervical rib on the right side, and a short one on the left.

An operation was performed on Feb. 28, 1910; the incision was made parallel with and just above the clavicle. The lower part of the brachial plexus lay over the cervical rib and was pressed against it; the subclavian artery was bent sharply over the rib, and was flattened.

A bursa about three-quarters of an inch in diameter containing clear serous fluid, encircled the artery where it lay in contact with the bone. Just beyond the rib the artery was enlarged and was filled with a clot which extended as far as the vessel could be followed downward. The distal end of the cervical rib articulated with the first thoracic rib, and at the point of union there was a distinct joint, lined by synovial membrane. The rib was carefully bared, the plexus and the artery being held aside for the purpose and about one and one-half inches were cut away, a rongeur being used to divide the proximal portion.

The removal of the rib allowed the artery and the brachial plexus to sink down and become "slack," thus showing that they had been stretched.

The wound was drained with a few strands of silkworm gut and closed with a continuous suture. Primary healing took place. There seemed to be no ill result of the rather extensive handling of the plexus and after three days there was no more pain in the fingers. When dismissed from the hospital the patient was entirely free from pain and a faint pulse could be felt in the brachial artery, but not below this; this would seem to show that the thrombosed portion of the subclavian artery had a small lumen (canalization of the thrombus).

The gangrenous portion of the index finger gradually separated and the resulting ulcer healed. At present the patient is entirely well.

416 Osborn Bldg.

The Cleveland Medical Journal

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EDITORIAL

Consolidation of Medical Schools.

On May 14, 1910, articles of agreement were signed by authority of the Trustees of Ohio Wesleyan University and of the Trustees of Western Reserve University which effect, at the end of the present college year, a consolidation of the Medical Department of Ohio Wesleyan University with the Medical Department of Western Reserve University. Under this agreement the students now registered in the Medical Department of Ohio Wesleyan University who have had a preliminary education equal to the entrance requirements of the Medical Department of Western Reserve University may become candidates, with the same class standing, for the medical degree of Western Reserve

University. Other students will be instructed by the Medical Faculty of Western Reserve University and upon completion of the four year course will be granted the M. D. degree of Ohio Wesleyan University. In the future, no new students are to be received into the Medical Department of Western Reserve University except under the present published entrance requirements.

In compliance with the terms of the agreement the Trustees of Western Reserve University have elected from the teaching staff of the Medical Department of Ohio Wesleyan University, one member to professorial rank on the Faculty of the Medical Department of Western Reserve University, and 18 other members to positions on the teaching staff for terms of one to five years each.

The consolidation of these two schools probably assures that there will be but a single regular school in Cleveland, a condition that has not existed since 1863 when the Charity Hospital Medical College was opened. This coalition of interests should tend to make Cleveland a yet more prominent center for medical education. Since both faculties voted unanimously in approval of the consolidation before it was consummated, hearty support to the new arrangement is to be expected from all of the members of both faculties and the community of interest will necessarily mean much to the medical interests of this city.

While this action is of large local interest and importance, it is but an incident in the great wave of improvement in medical education that is traversing the country.

The past 10 years represent a period notable for a critical study of medical education and the conditions bearing upon it, which has been fruitful of results. The Association of American Medical Colleges began the investigation on the problem in the nineties and early in the new century the Council on Education of the American Medical Association began a definite campaign for improvement. Aid has also been given by the American Academy of Medicine, the Confederation of State Examining and Licensing Boards and the National Association of State Boards. The Regents of the State of New York have also given much service and recently the Carnegie Foundation for the Advancement of Teaching has become a powerful factor for good.

The data collected by these various agencies gave much evidence that the defect of medical education in the United States was not in quantity but in quality. When it was shown that the United States had nearly as many medical schools as all the rest of the world combined, it appeared that one trenchant method of improvement would be to reduce the number of medical schools. Therefore, some five years ago a definite and well planned movement began for consolidation of schools in those parts of the country where the number of schools exceeded the needs. At that time Ohio had 10 schools. In the past two years this number has been reduced to seven by consolidation, first in Columbus, next in Cincinnati and now in Cleveland. In other cities, similar action has been taken, as in Los Angeles, Kansas City, Minneapolis, Indianapolis, Louisville, Nashville and in Oklahoma. Uncompleted but probable mergers are now in process in Denver, Des Moines, Chicago, St. Louis, Memphis, Richmond and Philadelphia. It is seen that the recent action in Cleveland, therefore, must be interpreted not as of local significance only but as part of a movement that is country-wide.

This is also all in response to the conviction on the part of many agencies, that efficient medical education cannot longer be given upon the income from student fees alone. Modern improvements in that type of professional training, demand large and ever increasing expenditure. President Pritchett of the Carnegie Foundation, after exhaustive investigation of medical education, said in a recent address: "A medical school, therefore, which is not in a position to spend $50,000 or $60,000 a year on the work of its first two years has omitted some part of its legitimate duty. It is difficult for any complete medical school to do its fair duty by a moderate body of students with an income of less than $100,000 a year. * * * * * * An institution which undertakes the teaching of medicine on a basis much lower than that which I have indicated, is not likely to serve either the cause of education or the cause of medical practise."

This all means that medical education in the near future must be restricted to the university medical schools; to those having aid either from public appropriation or through private endowment. Such a condition will reduce the present overproduction of physicians and at the same time increase their efficiency by training men in research and for the great problems of preventive as well as of curative medicine.

The reason for the large number of medical schools in the recent past and the general cause of the reduction now in progress is well summed up in a paragraph from a recent address by President Schurman of Cornell University. He says: "The personal profit of individuals has been the most powerful and prolific motive for the multiplication of medical colleges, as it has also been the most pernicious. Fortunately, however, the general spirit of the age, as well as the higher ideals of professional education, are working against these commercial medical schools. Not only are the motives of their founders and supporters better understood, but the superiority of medical schools founded on a different basis throws them more and more in the shade, while the growing costliness of a sound education in modern medicine makes their puny efforts ridiculous."

We are reaching higher ideals in medical education. The demand is for quality of the product, not for quantity, and the improvements which have come through the past 10 years of education of the profession and the public, point to yet greater efficiency in the future. We are justified in believing that the local consolidation adds momentum to the progress along these lines which is so necessary if the United States is in the future to have a position in medical education which shall command the respect of the world. F. C. W.

A Municipal Summer Campaign for the Reduction of Infantile Mortality.

No more important work could be undertaken by the municipality than a sincere effort on its part to draw into active cooperation all organizations interested in the welfare of children. The most laudable purpose of such cooperation might well be expressed in a program of methods to reduce the appalling infant mortality of our city. With so many other civic interests in the limelight we too often lose sight of the fact that the future stability and growth of society depend largely upon the preservation and proper development of child life. From time immemorial the baby has been the center of the home group. Its physical, as well as sentimental, attachments have endeared the baby to the heart of humankind. We have idealized mother and babe in our literature, art and religion—and truly for noble ends; but let us be perfectly square in our treatment of the baby. Have we not too frequently delivered the priceless bundle from turbulent waters only to see it borne shortly to the shores of Jordan, the helpless victim of contaminated milk, patent foods, or our social diseases? A conservative estimate places the number of babies under one year old who died in the United States during the last decade as over 2,000,000. The vast majority of these died from preventable diseases, almost one-half from gastro-intestinal disturbances. Are we really humane, or even economically sound, to allow this waste to continue without attempting to discover the factors entering it, and instituting measures to prevent the loss?

It is hopeful that we are beginning to take our bearings. Within the past year the American Association for Study and Prevention of Infant Mortality has been organized with active officers and a representative Board of Directors. Cleveland has been honored with three of the Directors. The main object of the Association are stated to be:

1. To direct attention to the excessive mortality among babies in our own country.
2. To study the causes to which it is due.
3. To suggest means by which it can be reduced.

Its broader program is very commendable and includes (1) the prompt and reliable registration of all births and deaths; (2) methods to improve the general social conditions; (3) the public control of all sources of infection; (4) education for parenthood —to foster the study of eugenics, "the science of human improvement by better breeding;" (5) the education of mothers in the essentials of personal hygiene, infant hygiene, and infant feeding; (6) the encouragement of maternal nursing and (7) the establishment of milk stations for the sale or distribution of pure, clean, tuberculosis-free milk. Such a campaign of education cannot fail eventually to reduce considerably the mortality among babies.

Much has already been done in a preliminary way to clear the ground for a municipal campaign in Cleveland. There has grown up here very friendly cooperation between the philanthropic and charitable organizations. Last summer the work undertaken by the Babies' Dispensary and Hospital in cooperation with the Board of Health, Board of Education, Milk Fund Association and many other institutions, demonstrated what could really be done, and pointed the way for larger things. The campaign this season may briefly be outlined as follows: It was thought best to organize with a Medical Director, and an Advisory Committee, the Committee consisting of:

1. The Director of Public Health and Sanitation.
2. A Member of the Committee on Public Health and Sanitation of the Cleveland Chamber of Commerce.
3. The Director of Schools.
4. The Secretary of the Milk Commission.
5. A Member from the Medical Board of the Babies' Dispensary and Hospital.
6. A Member of the Women's Board of the Babies' Dispensary and Hospital.

The center of the cooperative agencies carrying on this work will be the Babies' Dispensary and Hospital of Cleveland. At the central dispensary both well and ill infants of needy parents will be cared for. The attending physicians direct the feeding and hygiene of all well babies. Only sick infants of poor parents will receive medical treatment free, all others to be strictly referred to private physicians. Pure milk will be supplied at market rates to babies under the care of the Dispensary or of private physicians if a note accompanying the baby be sent to the Dispensary. The very poor may obtain milk at a special rate, or even free if necessary.

Six branch dispensaries with attending physicians and visiting nurses will be maintained to give intelligent direction to the feeding and hygiene of well babies. These will be located at Central Friendly Inn, Alta House, West Side Cottage, Perkins Day Nursery, Kinsman and Broadway Schools. The nurses outside of the regular dispensary hours (10 to 10:30 a. m.) will visit in the homes, and help in every way to carry on the education of mothers. Infants of needy parents too ill to be corrected by simple changes in feeding may be referred to the Central Dispensary for treatment. There will also be an Out-Door Ward similar to that of last summer, thoroughly equipped as a temporary hospital for sick infants. The Out-Door Ward last summer forcibly called our attention to the great need in Cleveland of a permanent hospital in Cleveland for babies.

A very important part of the summer work will be the distribution of milk. Milk from carefully selected, tuberculin-tested cows will be modified, or put up on order of physicians, at the Milk Laboratory in the Central Dispensary and distributed from there to the regular milk stations, day nurseries and kindergartens, boarding homes for babies, branch dispensaries, summer tents and general hospitals. Two milk wagons, as well as the Electric Package Co., will aid in this part of the work.

The Health Department has been asked to equip and maintain a number of tents for well babies under two years of age. These tents to be placed, as far as possible, on public school grounds where the greatest amount of shade is obtainable, and in districts where congestion exists. The tents should be near an entrance to some convenient room in the school building which could be simply fitted for the reception of mothers with babies. Here the babies could receive the necessary regular examination by visiting physicians, and attention of a nurse. Conferences of physicians and nurses with the mothers should be held from time to time. Each of these summer tents may be used as temporary milk stations if they are on the regular milk route.

The visiting physicians to the branch dispensaries and summer tents will be selected by the Medical Director, and the Director of Public Health from among physicians especially interested in babies, preference to be given those having had most experience with infant feeding and hygiene. Each visiting physician is to have general supervision over his individual branch. He is expected to examine the babies, write out a brief history of each, give hygienic advice, and direct the feeding. The Health Department has promised to see that the tents are properly equipped. It has given the assurance that it will furnish two of the nurses for the summer work.

As far as possible nurses from the Visiting Nurse Association will be employed in the summer campaign. The regular corps of nurses of the Babies' Dispensary, two nurses furnished by the Health Department, one of the school nurses, and as many others as may be needed, will enlist in the work of caring for the babies, and of educating mothers.

The Board of Education will cooperate by allowing the use of some of the school yards and an adjoining room for branch dispensary purposes. A School Nurse will also be assigned to work at one of the schools. The privilege of distributing through the school children in the congested districts, a concise statement for mothers regarding the benefit to be derived from bringing their babies to the dispensaries, has been extended. In this manner a very necessary part in the education of the mothers may be carried out.

All day nurseries and kindergartens in the city will take the pure milk and the feeding of the babies under their care will be directed by visiting physicians. It is aimed to develop the closest possible cooperation with the boarding homes for babies. These homes need the intelligent supervision, and moral suasion, to keep them up to a good standard. An endeavor has already been made to direct the feeding of babies in such homes, furnish milk from the dispensary at market prices, and have the nurses give kindly advice and instruction to the matrons. The ideal of having these homes take but one baby should constantly be kept in mind.

The Fresh Air Camp may be used as convalescent quarters for sick babies. A limited number of selected babies may be received at the Tent Colony. Other cooperative agencies may be summarized as, Rainbow Cottage, Tuberculosis Dispensary, obstetrical dispensaries, Associated Charities, Hebrew Relief, Humane Society, and general hospitals and dispensaries.

In order to make this work eminently successful the active cooperation of every practising physician in the city is necessary. It should be distinctly understood that in no way can this summer campaign really undermine their private practise. On the other hand, if rightly used it will greatly enhance their value to society. Only sick babies of those who cannot afford the fee of a private physician (this will be determined by a rigid investigation of material circumstances) will be treated at the dispensary. All well babies should be *kept well* by supplying pure milk modified according to physicians' directions. When this sort of social service has proved its true value there is no doubt that every city worthy of a name will establish a Municipal Bureau of Infant and Child Hygiene. R. A. B.

Additional Endowment for Western Reserve Medical Department

Announcement is made by Western Reserve University of a gift to it by Mr. H. M. Hanna of $250,000 as an additional endowment fund for its Medical Department.

This gift was made early in the present year and its income has been available for part of the current college year, but public announcement has been deferred until this time.

The endowment of the Medical Department before the receipt of this sum was something over $500,000, so that this recent gift increases the endowment by nearly one-half, and enables that department of the University to increase very materially its facilities, equipment and efficiency.

Mr. Hanna has given largely to the Medical Department previous to this latest gift. In 1897 he established a research fellowship, one of the first to be established in any medical school in the country; in 1900 he endowed the Leonard Hanna Chair of Clinical Microscopy; in 1904 he endowed the Henry Willson Payne Chair of Anatomy; in 1908, in company with Colonel Oliver Payne, he built the H. K. Cushing Laboratory of Experimental Medicine and provided a generous endowment for its maintenance and for a professorship in Experimental Medicine, and in 1908 he gave a further endowment for apparatus for that laboratory.

It is through the generous support of Mr. Hanna, Mr. Payne and other similarly public spirited gentlemen of Cleveland, and especially through the continued interest and support of the University Trustees, that the Medical Department of Western Reserve University has been able to develop the high efficiency and excellent reputation that now characterizes it. Twenty-five years ago it was a school that was favorably known locally and in the State, but had no greater reputation outside the State than many other schools of the country. It was in 1887 that Mr. John L. Woods erected the building at East Ninth street and St. Clair avenue, at present occupied by the school, and he also gave in 1892 an endowment fund of $142,000 towards the support of the school. This was one of the very first endowments given for medical education in the United States, and with its help this school was able to inaugurate a higher type of medical training than had previously been afforded in this part of the country and, by demanding a fuller preliminary education, to select with more care the sort of men whom it should train for the medical profession.

The work of the school has been conducted on sound educational principles, many of which have been copied by other institutions. Its teaching has been improved and its research increased each year until now its reputation is world-wide and in the opinion of some of the better authorities on medical education this school is one of the two or three best schools in the United States. No type of education has shown such improvement in the past 20 years as has medical education, and Western Reserve University has been one of the agencies in leading the advance.

To Mr. Hanna, more than to any other one man, both the University and the City of Cleveland are indebted for fostering the highest type of professional training and medical research, and for making this city known throughout the educational and medical world as the seat of one of the best medical schools existent.

The demands of medical education and medical research are increasing and there is yet much to do. The modern type of medical work is extremely expensive,—more expensive than any other type of education,—and to meet the demands which the immediate future brings for improvement and expansion in teaching and research, the Medical Department of Western Reserve University will need increasing resources. To this end a determined effort is in progress to add to the endowment of that department the sum of $1,000,000. Toward this object the gift by Mr. Hanna affords not only one-fourth of that sum, but also a far reaching stimulus for securing the remainder. When this sum is in hand, the resources then available will enable the University to carry on medical education and research here in Cleveland that is second to none now given anywhere.

Joint Boards for the Protection of Rivers.

One of the most interesting studies to the traveler interested in the health of the community is the development of legislation for the preservation of the purity of the water supplies, whether for the purposes of household or trade use. Perhaps nowhere do we see conditions parallel to those in England where the combination of an enormous trading interest with the consequent pollution of the streams, the comparatively small size of those streams, and the density of population of a primarily money-making type have led to unusual problems. Although these problems, as compared with similar conditions in America, appear unusual, yet in the rapid increase of trade of various kinds there is no reason to be sure that the like may not occur to us. The suddenness with which conditions change is a matter of common talk, and it is just possible that we may learn from our neighbors how to avoid some of their troubles.

Some weeks spent in the North of England in the consideration of water supplies, and sewage and refuse disposal induce thought as to these matters, and an account of the developments there may not be without interest. By far the greater part of the manufacturing district of England lies in the counties of Yorkshire and of Lancashire, where, as stated to me by the Chief Inspector of one of the Rivers Boards, practically every manufactory, with the exception of whisky distilling, may be met with. The combination of coal under the surface, available water on the surface, and abundant means of transportation by land and water, make this easily possible. In a historical statement made some few years ago by the chairman of one of the boards, it is noted that while in 1850 the streams of the district were noted for their salmon and trout, the conditions changed so rapidly that in 1865 it was found necessary to appoint a commission for the investigation of the matter, whose report contained some astonishing facts. This commission reported in 1867, and found, to quote their own words: "With very few exceptions the streams . . . run with a liquid which has more the appearance of ink than of water. They . . . are abused by passing into them hundreds of thousands of tons per annum of ashes, slag and cinders from steam boiler furnaces, iron works and domestic fires; . . . by spent dye-woods and other solids used in the treatment of worsted and woolens; by hundreds of carcasses of animals which are allowed to float on the surface of the streams or putrefy on the banks; and by the flowing in to the amount of very many millions of gallons a day of water poisoned, corrupted and clogged by refuse from mines, chemical works, dyeing, scouring and fulling worsted and woolen stuffs, skin-cleaning and tanning, slaughter-house garbage, and the sewage of towns and houses." The Bradford Canal could be set on fire and would burn with flames six feet high, and the general stench was such that navigation on several of the canals was seriously threatened. *And all this in 17 years!* In spite of the report of the commission, nothing was done for a time, until in 1876 the Rivers Pollution Act was passed through Parliament. This was fairly good, and in fact, most of the boards are now acting under it, as it was drawn to meet the conditions shown by the commissions, but at that time little was accomplished. The execution was in the hands of the local authorities, most of whom were personally interested, either as manufacturers in making as large a profit as possible, or as property owners in avoiding expenses which would increase the local taxes. Moreover, it was obviously difficult to enforce proper behavior on someone to whom the water came from another district in a polluted state, or who saw his neighbor below him, in still another district, allowed to continue similar processes unchecked. A further complication lay in the seizure of the main water supplies for the larger towns. A ridge of hills lies between Lancashire and Yorkshire, with peaty meadows, and from these hills the greater part of the towns on either side get their water for drinking and household purposes. Inasmuch as there are already in existence many local water rights, it was necessary for these towns to insure the flow of a minimum quantity down the original bed, and manufacturers were not slow to appreciate the advantages of an assured quantity of water at all seasons. The result was that factories sprang up as near the top of the stream as possible, so that the water was polluted from the outset. In some of the rivers the water passes practically continuously from one mill to another, and is entirely composed of the effluents from these mills. For some 13 years after the passing of the Rivers Pollution Act little was accomplished, but at that time the establishment of these combinations for the supervision of one or more watercourses and their tributaries having been legalized, rivers boards were formed in several districts. These are distinct in authority, act either under the 1876 act or under special acts of their own, and are composed of representatives from the administrative districts concerned. These boards appoint certain executive officers with the necessary staffs, and all suits, etc., are carried on in the name of the board.

Several of these boards were formed and it was again found that the districts were too limited and several of them coalesced the better to carry on the work. In 1890 to 1894 these were established, and the results have been notable. It has been the wise policy of the boards to lead rather than to drive, and to show the manufacturers and the communities that their own interest lies along these lines, but in cases of obstinacy to force the law as far as possible. The conditions noted as obtaining in 1865 were aggravated in later years by the increase of trade and population, so that it is fair to compare the appearance of the streams as noted by personal observations with the descriptions of that commission. These were observed on both sides of the divide, but more in detail on the western or Lancashire side. Practically all the mills having effluents with chemical or solid contents contrary to the interpretation of the law have their own sedimentation tanks, from which they remove the deposit or sludge and dispose of it, leaving a fluid effluent which is at least so far purified that it can be used by the mill below as condenser water or even for certain trade purposes, the different communities have established sewage disposal plants of various types, subject to supervision of the inspectors, and the conditions have so far changed that in many of the streams the fish have begun to come back, and there is a growth of water weeds, unknown for many years. It is true that things are by no means ideal as yet, but the improvement is continuous. In some cases the manufacturers have been shown that by proper treatment they can make a good profit from refuse previously thrown away, and it is undoubted that greater knowledge along these lines will steadily reduce the amount of solids now thrown away. The fact that the rivers are composed entirely of effluent precludes piping the water for some distance and there disposing of it, as the mills below would then have to cease operations. Moreover the degree of completeness of treatment is limited by the amount of expense to which a manufacturer can reasonably be put, and when one sees a mass of dried sludge from a single works filling a valley 50 or 60 yards wide to a depth of many feet, and appreciates that the amount of effluent of solid and fluid type from one such factory is as large as the total sewage output of a good sized town, running often as high as 5,000,000 gallons daily, it is obvious that some consideration is due the mill owner. On the other hand, it requires eternal vigilance on the part of the inspectors to make sure that the law is not being evaded, inasmuch as at present the penalties are small enough to make it well worth while to take a certain degree of risk. There are also other weak points in the law which the various boards are endeavoring to have adequately strengthened.

Here, then is a series of conditions which sprang up within less than a score of years, and required special and expensive machinery to combat, conditions most of which could have been prevented at a far smaller expense had they been taken in time, and many of which would indeed probably never have arisen. It is true, of course, that the streams are far smaller than ours, the Ribble, which collects most of the water in the Lancashire district of the same name, being about the size of the Chagrin river at Gates Mill, at its largest above tide water, and the smaller streams being in many cases only a few feet wide. Yet though in Northern Ohio there are now comparatively few mills discharging trade effluents into the streams, there are also comparatively few communities which do not discharge their untreated sewage into these streams. Owing to the larger volume of water and the consequent dilution of the pollution, the gross contamination is less evident, yet certainly the prevalence of typhoid and its increase in the last few years almost to an endemic position shows a condition which is certainly not a credit to the community. The steady growth of population, the steady increase of manufactures, neither of which it is in the interest of the State to discourage, can but lead to an equally steady increase of the pollution, and in our modern knowledge of the causes of disease the sequel is not far to seek. The hardest thing to impress on the human mind is that it is profitable to spend something early to avoid spending far more later, but the experience of England at least has shown us in what direction we are tending, and the work of the experts that their problems have developed has given us the means to avoid in large degree their past and present difficulties, if we apply them to our own conditions. R. G. P.

Some Changes in Medical Education.

The past decade has seen very striking changes in the methods of training men for the medical profession. The previous decade had partially prepared the way for the advances that have come in the new century, for between 1890 and 1900 there appeared a general activity in the establishment of Medical Examining Boards under the direction of the State and the extension of the medical course both as to the length of the term and the number of years in the course.

The general improvement in medical training is due to several concomitant causes.

1. The requirement that every candidate entering the profession should pass an examination under State supervision has had large influence in leading colleges to select with more care the men whom they graduate. Under the former system, where the diploma of any chartered medical college carried the right to practise there was a constant invitation to colleges to seek income and renown by graduating large numbers of men; frequently some were unfit. Under such a system, when a man graduated there was no higher court to judge of his fitness, but now when he must pass a State examination, there is a reaction against the reputation of a school if it graduates illy prepared men. Therefore, however insufficient some State boards may be

considered, it is certain that the system of State licensing after examination has improved the quality of the medical graduate through its influence on the schools.

At least it has inhibited the further degradation of the medical degree which was so evident in the eighties and nineties due to the multiplicity of medical colleges in the United States, many of which were carried on a basis largely commercial.

2. The lengthening of the course of study and the grading of the course began a quarter century ago and largely under the stimulus of the advance in the biological sciences following the work of Pasteur. It became simply a question of supply and demand. The amount of knowledge in the medical sciences demanded more time of the student and this could be supplied only by increasing the length of his tutelage. That demand is still insistent and we all know how much we must condense and abstract the subject matter of the medical courses in order to give to the student even an introduction to the present wide range of medical knowledge.

3. This condition has led to the next great change, which is to demand a better preliminary training of the student before he enters on the medical course. Such demand serves two purposes. It relieves the medical curriculum of some work that formerly was contained in it and it gives on the average a student who is capable of accomplishing more work in a given time. This is not the place to discuss what is the best amount of preliminary training in order to secure the best result. There are many arguments pro and con regarding higher preliminary requirements. However, it seems the consensus of present opinion that 25 years hence we shall find most medical schools in this country demanding two years of academic college work for entrance. A few will be able to secure more and doubtless a few will demand less, but two years seems to be the norm that is likely to be reached.

4. With the development and extension of the medical course and especially the laboratory instruction, has come great increase in the expense of maintenance. It is no longer possible for a school to instruct great masses of students at the minimum expense of a large amphitheater. These two factors of the increase in total cost of conducting a school, and the cutting down of numbers of students by entrance requirements and State board demands; these two, working together, make it no longer possible for any school to give efficient medical instruction on the income

from student fees alone. There is a maximum above which tuition cannot go. It is somewhere from $200 to $300 per year, and for the clientele of the average medical school $150 to $200 is the maximum. It is agreed among those versed in medical education that competent instruction and facilities cannot be given for $150 per year per student. The corollary is that medical schools must have additional support either from private or State sources. There are, of course, some schools still going on with no income but student fees and still living on past reputation, but that condition cannot continue, and the struggle in every school in the country is to secure outside aid. It is evident to all that only the university schools can endure and the end of the next decade is likely to see very few others existing.

5. It became evident ten years ago that the supply of new graduates into the medical profession was greater than the demand. This, coupled with the fact that the need was not for more graduates but for better trained ones, was the basic cause for the movement for higher entrance requirements which has become such a force in medical education. Its results are already seen in a yearly diminution of both the number of graduates and the number of students in the country. This process will continue for many years to come and we may be sure that the ratio of population to practitioners, which has gradually diminished for the past 25 years, will show marked increase in the next decade. The total population of the country will increase while the number of medical graduates per year will diminish due to higher entrance requirements, to more vigorous State board examinations and to diminution in the number of medical schools.

F. C. W.

Robert Koch.

Robert Koch, the famous bacteriologist and one of the leading figures in medicine, died May 27, at Baden Baden, of heart disease in his sixty-seventh year. Since the passing of Pasteur and Virchow, Koch has been undoubtedly the most widely known man in the medical sciences and his death marks the passing of an era. The rise of Robert Koch from an obscure practitioner of medicine to the position of one of the greatest benefactors of mankind, with the coveted title of Professor and the Directorship of a special Institute for Infectious Diseases was almost meteoric.

Robert Koch graduated in medicine from the University of Göttingen in 1866 and 12 years later, while a practitioner in a country town, published fundamental researches on anthrax and upon wound infections. In 1882 he published what was undoubtedly his greatest work—the discovery of the cause of tuberculosis and the use of solid media for the cultivation and isolation of bacteria. His work on the tubercle bacillus was remarkably complete and little short of marvelous when one considers the difficulty with which this organism is cultivated and stained, and the comparatively primitive methods of that time. The introduction of solid media for the culture of bacteria was a stroke of genius stimulated by the necessities of his work. It is upon these two achievements, especially, that Koch's fame will rest.

In 1883 Koch, while at the head of the German Cholera Expedition to Egypt and India, discovered the cholera spirillum. In 1885 he was appointed Professor in the University of Berlin and in 1891 Director of the new Institute for Infectious Diseases. Koch's appointment to these two positions, without having gone through the customary routine of university promotions, was bitterly opposed by leading spirits in the University of Berlin. The action of the Government in thus recognizing and utilizing the services of such a genius was, however, amply justified by events.

His laboratory became the Mecca of the new school of bacteriology, and Koch and his pupils are largely responsible for the development of the fundamental and technical methods of modern bacteriology. From the use of these methods have sprung not only the discovery and classification of large numbers of bacterial species, including many pathogenic forms, but a revolution in certain aspects of hygiene and sanitation. While the conception of antiseptic surgical technic is the fruit of the genius of Pasteur and Lister, aseptic surgery was rendered possible largely through the technical methods of Koch and his pupils.

Koch, in 1891, announced the discovery of a substance, tuberculin, obtained by extraction from tubercle bacilli, which gave rise to a specific reaction in tuberculous individuals and which possessed curative properties. Partly, at least, on account of unwarranted exaggeration and misinterpretation of his statements this substance was incautiously used and failed to measure up to expectations in the treatment of tuberculosis. In consequence Koch suffered much in reputation. Experience has shown, however, that tuberculin, when used judiciously, is a valuable addition in the treatment as well as in the diagnosis of tuberculosis.

Strangely enough, though so much interested in the infectious diseases, Koch has played, personally, a relatively inconspicuous part in the development of immunology.

In 1896 he went to South Africa to study cattle plague. Later he gave up his professorship and of late years he spent a great part of his time in South Africa in the study of malaria, sleeping sickness and relapsing fever, to the knowledge of all of which he made valuable contributions.

Besides those previously mentioned, Koch received numerous and distinguished tokens of honor and esteem from his own and foreign governments as well as from many scientific bodies. Chiefly on account of the wide influence of his work upon hygiene and preventive medicine the world is under deep and lasting obligations to him and he must ever rank among the chiefest benefactors of the animal kingdom.

Without doubt Robert Koch was a genius of a high order, but possibly not of the highest order, for he seemed to lack the imaginative and philosophical qualities essential for the deep insight and broad generalizations that characterize men of the type of Johannes Müller, Virchow, Pasteur, and Ehrlich, for instance. He propounded no great theories or working hypotheses; he contributed little to the fundamental knowledge of the bacteria and his work, in many respects, lacked completeness in that it did not measure up to its full opportunities. The genius of Robert Koch seems to have been of an objective and technical nature, especially suited to the elaboration of the technical methods and measures necessary for the working out of the practical details of a new science. He leaves the field of the infectious diseases with many questions unsolved and awaiting the arrival of another genius to devise other methods and newer avenues of approach. His accomplishment and rise to success and fame should be an inspiration to the young medical man. His early struggles in isolation and in comparative poverty, his perseverance against great difficulties, his fearlessness in attacking great and difficult problems, his fertility in expedients for accomplishing his ends, the comparative completeness of much of his work and the practical application he made of his results, all stamp him as a personality of great courage, of boundless capacity for details, of clear insight into his problems and of great service to humanity.

Distribution of Physicians in Ohio.

At this season of the year many men who are just completing their medical training are debating as to a location in which to carry on the practise of their profession. In this connection a statistical study of the distribution of physicians in Ohio and its relation to the population is of interest.

The figures given are compiled from the 1909 edition of the Medical Directory published by the American Medical Association. The data for this directory were collected in 1908, but are the latest available. The figures for population are estimates made about 1905.

For the total population in the State of 4,302,860 inhabitants, there are 7,838 physicians or 1 to each 549 of population. The ratio for the entire United States is 1 to 655. The ratio in various States varies from 1 to 239 in Nevada to 1 to 1,324 in South Carolina.

The following tabulation aims to show the relative distribution in the large centers of population, in the smaller cities of several sizes and in the smaller towns:

	Number of Physicians.	Population to each Physician
Cleveland	958	513
Cincinnati	912	383
Toledo	360	470
Columbus	447	343
Dayton	253	560
Akron	106	663
Youngstown	114	495
5 cities of 25,000 to 50,000	316	577
8 cities of 20,000 to 25,000	319	540
6 cities of 15,000 to 20,000	172	544
12 cities of 10,000 to 15,000	288	525
36 towns of 5,000 to 10,000	594	267
51 towns of 2,500 to 5,000	488	366
1,212 towns, villages and hamlets below 2,500	2,565	217

The rural population in the State not included in population of cities and towns above noted is 1,589,569.

The total of physicians in the above table exceeds the total in the State by about 80. This is due to men having two offices and being counted at both places.

In the five cities of over 100,000 population there are 2,930 physicians or over 37% of all in the State, but these five cities contain but 30% of the population of the State.

In the 12 cities of more than 25,000 population with a total of 1,611,220 population, there are 3,466 physicians. These cities have 44% of the physicians of the State but only 37% of the population. In the 38 cities of 10,000 population or more there are 4,245 physicians or 54% of those in the State. These cities have 2,028,303 population or 46% of the total of the State.

It is apparent from these figures that the larger cities have more than their share of physicians. This is very striking for Cincinnati and Columbus. In Cincinnati it may be that the position adjacent to another State influences this. There are probably a considerable number of men in that city that have part of their practise in Kentucky. It should also be borne in mind that the medical schools of these two cities have been very prolific, and this, with the tendency which holds new graduates in the city where they graduate, has helped to bring about the evident excess in Cincinnati and Columbus.

The sharp drop in ratio when we reach, in the table, the towns of 5,000 to 10,000 is probably due to the fact that a considerable amount of the practise of men in these towns is among the adjacent rural population, but also it may be due to the fact that so many young men who seek locations choose towns of this size. It is evident that towns of this size are more crowded professionally than are the towns of 2,500 to 5,000 and especially so when one takes into account the rural population adjacent to the smaller towns.

The rush to the cities which is so great a menace to the economic prosperity of the country seems to be reflected in the distribution of the medical profession. It appears that some influence should be exerted to induce well trained and capable young physicians to locate in the smaller towns. There is opportunity there, to be sure of a somewhat different kind, but yet favorable opportunity, for men to follow their profession successfully and to assure themselves in a short time of comfort of living and a relative standing in the community which are usually not attained in the large cities except after years of meagerness. In Ohio especially the excellent avenues of communication by steam and electric lines, the extensive use of automobiles, the proximity of cities and the universal presence of telephone connections assures that the old time isolation of the smaller towns is no longer to be feared. It is to be hoped that more and more we shall see some of the younger men going to the smaller communities rather than congregating in the cities. F. C. W.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Digitalis: H. A. Hare in the *Therapeutic Gazette* for April considers the relation of digitalis to the bundle of His. It is hardly necessary to remind the medical men of today that the impulse which results in cardiac contraction arises at the sinoauricular node, or at the mouth of the great veins, and from thence passes down over the auricular and ventricular walls; nor is it necessary to recall the fact that disease or injury of His's bundle at the auriculo-ventricular margin results in partial or complete heart block. It is also important to remember that the bulk of evidence seems to indicate that the influence of the vagus is exerted directly on the auricular movements, and only indirectly upon those of the ventricles. Turning now to the greatest of all cardiac drugs, digitalis, we may recall two important facts. The first is that it powerfully stimulates the vagi, and so primarily slows the auricles, and indirectly the ventricles. The second fact is that it stimulates the auricular walls themselves very little, if at all, but powerfully stimulates the ventricular walls so that they beat more forcibly, and further, if these ventricular walls are cut off from the vagus influence by injury to the bundle of His, they also contract more frequently under digitalis than before the drug is given: the use of digitalis in a case of partial heart block may precipitate a fatal attack of the Stokes-Adams syndrome. On the other hand, it is conceivable that in the presence of complete destruction of His's bundle, or complete heart block, the use of digitalis may be advantageous. Bachman's experience with strophanthus showed excellent results in a case of complete heart block in a human being, and it would seem that both digitalis and strophanthus are capable of doing harm in partial heart block and of doing good in complete heart block. Hare presents these deductions as seeming to be correct and important. Given a patient suffering from circulatory failure due to mitral stenosis, it is our duty not only to carefully weigh the import of the tumultuous cardiac sounds, but by the use of instruments of precision to determine, if possible, whether there is delay in the transmission of the contraction impulse over His's bundle. If such a delay exists, then digitalis in doses large enough to cause a distinct and sharp cardiac effect is probably capable of prolonging this delay, and so doing harm. If, in addition to this delay, there is a jugular pulse, synchronous with the ventricular systole, digitalis is still more contraindicated, as it will impair the action of the left auricle and will still further distend it by stimulating the right ventricle. If given at all the dose of digitalis must be so small as to produce a very gradual effect, one which will not consist in decreasing auricular contraction through vagal stimulation, but gently reestablish general cardiac power. In other words, here is another instance in which the question of a proper dose is as important as the choice of the proper drug. The question naturally arises, if not digitalis, what else? The answer would seem to be that in such a case as that just described, we would give the patient absolute rest, unload the portal system by free purgation, use venesection it may be to relieve stasis, and give rapidly acting diffusible stimulants for a few hours until coordination of cardiac movement is reestablished. When this is done then small doses of digitalis, arsenic and iron may be used to restore cardiac tone.

Vasomotor Drugs: In the *Archives of Internal Medicine* for April, Carl J. Wiggers treats of the comparative value of vasomotor drugs in renal hemorrhage. Since the lowering of blood pressure during hemorrhage contributes materially to its natural diminution, it is argued that further reduction in pressure should favor a prompt cessation. This doctrine, so frequently emphasized as fundamental in the treatment of bleeding, loses sight of the important fact that, during hemorrhage, all the protective mechanisms of the body are called into play to maintain the blood pressure, so that the brain, which is the organ most susceptible to anemia shall receive a supply approaching the normal. To accomplish this the peripheral vessels constrict, the heart beats faster, and lymph flows in from the surrounding tissues. Consequently Wiggers contends that any agent that counteracts these mechanisms is as unphysiological as those that increase the bleeding. The evidently beneficial results from the use of ergot (ergotoxin) in uterine hemorrhage, has given the drug a reputation of being efficacious, through its vasoconstricting power, in checking bleeding from other organs. Such therapy is entirely empirical, however, for it is now known that its benficial influence in uterine hemorrhage results from its action on the muscles of that organ rather than on the blood vessels. He concluded that ergotoxin cannot be looked upon as a drug of value in renal hemorrhage for these reasons: (1) It causes a permanent elevation of pressure, only when the loss of blood has been relatively small, thus restricting its use to the early part of a hemorrhage. (2) Unless small doses are employed it depresses the respiratory center instead of stimulating it. (3) Ergot interferes with the subsequent beneficial effects of adrenalin. (4) Ergot is not a hemostatic in renal hemorrhages. The local constriction is not sufficient to counterbalance the rise in blood pressure; consequently renal hemorrhages tend to increase unless some subsidiary factor prevents this. That drug is of the greatest therapeutic value which is capable of decreasing the bleeding at the same time that it creates a better blood supply to the brain. The activity of the respiratory center furnishes an indication of its value in this capacity. Of the drugs studied in renal hemorrhage adrenalin alone fulfills these requirements. Nitrates decrease bleeding satisfactorily, but often dangerously diminish the blood supply to the brain. Pituitary extract elevates the pressure, and improves respiratory activity, but is not a hemostatic. Ergotoxin is not a hemostatic, and the beneficial action that the blood pressure rise should occasion is counteracted by the depressing influence on the respiratory center.

Insomnia: *Therapeutic Medicine* for May states that drugs in the treatment of insomnia are to be employed with the greatest circumspection. Perhaps no other phase of practise is fraught with greater responsibility than the treatment of sleeplessness. When it occurs as a minor disorder, that is to say, as an occasional result of some known violation of the laws of health, no account need be taken of it. We all suffer at times from that kind of insomnia. Excessive fatigue and eating just before retiring are common causes of minor insomnia, but there is also a simple insomnia, due to a wholly empty stomach, and needing only a little hot milk to set things right. Flatulence with an overloaded colon may prevent sleep, and the effects of tea, coffee and tobacco are familiar to all, though it is less often recognized that strychnin, caffein and bromid when given medicinally often causes insomnia. Mental excitement is, of course, a dispeller of sleep, while the high arterial tension of Bright's, arteriosclerosis and certain digestive disturbances are often the cause of persistant insomnia, and sleeplessness in old age is due to rigid vessels in the brain. On the other hand there is the insomnia of vascular debility as in convalescence from grippe and typhoid, and here the trouble is feeble vasoconstrictor action, a kind of vascular paresis. Each case must be studied on its merits. It goes without saying that soporifics are not to be given indiscriminately. Underlying causes must be corrected, drugs, when they are used, being regarded as expedients, while the cause is being sought out. Major insomnia is a somewhat different matter. That ushering in or accompanying acute insanity, or that associated with severe organic disease, must be combatted with powerful drugs, as morphin, hyoscin, chloral, and at times even chloroform. It may be necessary in the early stages of pneumonia or pleuritis to give morphin hypodermically to relieve insomnia, delirium, restlessness, pain or cough. Its use should be avoided in the presence of cyanosis, while in the sleeplessness and restlessness of cardiac disease it may be necessary to employ morphin. When it is necessary to use soporifics in neurosis and simple mental restlessness or excitement the bromids are to be first thought of. Simple measures are to be exhausted first, as warm baths, hot drinks on retiring, etc., while in selected cases chloral may be combined with the bromid. In insomnia, due to neuralgic pain, a five grain dose of antipyrin will induce sleep, and in certain cases of neurasthenia one may have to give sulphonal in 20 grain doses in very hot water. Sulphonal and potassium bromid together act particularly well. Veronal is a good general hypnotic in doses of seven grains, and codein should be substituted for morphin whenever possible.

Pneumonia: In *American Medicine* for April, Louis Fischer considers the treatment of pneumonia in children. In his experience children do not cough in the very beginning of pneumonia, this symptom coming on later in the disease. The early symptoms rather resemble those of gastro-intestinal indigestion. In dealing with persistent fever, after castor oil and rhubarb and soda have been given, the diet corrected, and if throat and ears have been properly inspected and nothing found, he usually suspects limited pneumonic process, a central pneumonia. These are the cases which baffle us early in the disease, and it will take two or three days until the diagnosis can be made positively. The wandering type of pneumonia is another thing which is very disagreeable; in one case there were three distinct lobar infections which took one month to attain the final issue. As to the treatment of lobar pneumonia he believes in oxygenating the lungs, and as pneumonia is a communicable disease we should exclude all useless outsiders. He is not in accord with people who teach that cold winds or south winds are very valuable for very frail and pneumonic children with subnormal vitality. He says he cannot expose a child who is cyanotic in a room filled with cold air. He has seen so many fatal cases following such exposure that he decides to go on record against it. He would not do it with his own child, believing the effect of such exposure to be fatal. When children have been coddled with blankets, etc., one must individualize.

Phthisiophobia: John H. Lowman, in the *Medical Record* for May 14, states that fear has undoubtedly been one of the greatest promoters of human progress, for to fear an enemy is to study his resources, question his motives, spy out his movements, and strive by all efficient means to prevail against him. To fear tuberculosis is to run from an idea, but to protect the tuberculous from others and from themselves is sane, sound and effective: the very act of resisting a common danger energetically will dispel unreasonable fear. When we have a precise knowledge of tuberculosis and its effect on mankind, and can show that many places have been freed from its ravages, and can demonstrate the exact means by which this has been accomplished, we will have taken a long step toward substituting prudence for fright. That the world fears tuberculosis is undoubtedly true: tuberculosis is contagious, but its contagion is controllable. It is the knowledge of what is possible in the case of the individual that must root out the fear of the disease generally. Replace the generic idea of the disease by the thought of the individual. Replace the fear of illness by the fear of penalty from a vigorous administration of the law, and the public will have something tangible to think about which will not scare it and which it will respect. From the standpoint of tuberculosis one can know the risks entailed by associating with certain groups of men, and estimate in a way the percentage of the increment of fear which he should maintain. While the extremist may demand isolation for the advanced cases of tuberculosis, he is obliged to agree with the opportunist that the incipient, early, and arrested cases call for special rules. Moreover, the rules will be as numerous and as variable as the individuals attacked; yet hysterical fear, phthisiophobia, has no place here. Should the national government determine to direct, regulate and control the movement against tuberculosis it would find itself at once in possession of any army of eager volunteers ready to be led. He doubts if anything would give more confidence to the nation in its efforts against consumption than an active, well organized government control, and nothing would more quickly banish fear. In the meantime we shall have to admit that a wholesome fear is our strongest defense.

Infant Feeding: In the May number of the *Medical Council* the present status of the infant feeding problem is summarized. On no subject in medical science has more been accomplished during the past half century than on that of milk diet in its relation to the artificial feeding of infants. Withal we are compelled to confess that the real problem is far from solved, that the larger part of research work done has little or no value in the nursery, and finally, that much that the specialists find of more or less utility in the feeding of infants is far from simple and practical enough for the average family physician. To the latter, the specialist's favorite method becomes a mere rule, or working formula, that proves lacking in flexibility, and for this reason, a failure in practise In other terms, the very choicest of the net gain of the half century's research breaks down before the personal equation in the problem of infant feeding. Any estimation of the present status of the problem that fails to accord this personal factor its proper value is false and delusive. Many percentage formulas are clever, not to say elegant, but they are commendable for their mathematics rather than for their practicability as working rules in the nursery. Feeding by the caloric method, now so much in the limelight in Germany, is all well enough for foot soldiers and athletes in training or to decorate charts for the walls of the scientific laboratories, but not for feeding the average infant. Above all, every other factor being equal, the milk which was most recently drawn should be employed to the exclusion of all others. The point of first importance in this problem of feeding is that the purely dietetic phase of it has been developed beyond the infantile—that the man in the region of the crucible and test tube has shown vastly greater diligence than the pediatrist. We have studied milk until there seems to remain no more to explore. Not so the personal infantile equation. And here lies the *crux* in the art of infant feeding as it stands today. This personal factor is virtually threefold, and no consideration of the subject is complete if it omits reference to the physician in attendance, and the person in charge of the infant being fed. In conclusion it can only be lamented that many an infant unfortunately deprived of mother's milk is only more unfortunate in having a physician or attendant, or both, who lack the dogged patience and plain practical working sense that such cases demand. The result is disaster if not early death.

Renal Calculi: In *Merck's Archives* for April, John B. Talmage, believes that prophylaxis in those of a gouty diathesis, and against future attacks is the ideal management of cases of renal calculi; and consists of the same treatment as that employed for the chronic and intermediate stages of the disease. For the acute attack hypodermic injections of morphin guarded by small doses of atropin frequently repeated, until the pain is under control are best. Follow this by a general stimulating treatment with whiskey and strychnin if shock and collapse are present. Prolonged hot baths help to reduce, and sometimes stop the spasm, but are only resorted to if the patient's general condition warrants such a procedure. If the stomach and intestines are sympathetically upset they must be treated symptomatically. Hexamethylenamin and large quantities of water should follow the attack, to prevent the formation of pus and to flush out the kidneys. As regards the procedure for the chronic stage and for the time between acute attacks, the causal indication is met by keeping the substances which lead to the formation of stone within the body at as low a percentage as possible, and stopping their accumulation in the kidneys. In conjunction with dietary, open air and exercise must be had daily. Warm baths, particularly the mineral variety, increase diuresis, diminish urinary acidity, and favorably influence general metabolism. To increase the dissolving power of the urine for uric acid, alkalies in the form of carbonates or salts of the vegetable acids (citrates and acetates), alkaline earths, and lithium salts are employed. These are to be taken with plenty of water, as the active flushing of the kidneys is as important as rendering the urine alkaline and dissolving concretions. Of medicines there are two which are as good solvents (so called) as can be given; piperazin in doses of 15 to 20 grains well dissolved in seltzer water and drunk throughout the day, and hexamethylenamin 15 to 20 grains taken in one daily dose in plenty of water. For oxalic acid calculi the same dietetic and medicinal treatment applies as for oxaluria; while phosphatic stones are generally secondary and the original alkaline urine or pyelitis must be treated in the first place. Attention to details in the daily life, diet and excretion can cure the disease but with the tendency to recurrence the prognosis is always doubtful unless the patient aids willingly in all efforts.

Ankylostomiasis: *The New York Medical Journal* for May 14 (from *Janus*) calls attention to the fact that four percent of the patients treated in the Polyclinic in Ngawi, Japan, were suffering from ankylostomiasis, many of them in a grave condition. He found the number so great that it would have been impossible to treat them all had he not found a remedy which had a quicker and more certain action than either thymol or extract of male fern. This new remedy consists of oil of eucalyptus and chloroform according to this formula: oil of eucalyptus 2.5 grams (about 37 grains), chloroform 3.5 grams (about 52 grains), castor oil 40 grams (nearly three ounces). This dose is to be taken in the morning and repeated after two hours if necessary, the medication may be repeated twice within the week. So far he has not in a single case had to administer the medicine on more than two days, and in many cases a single dose has sufficed to remove all the ova of *Ankylostoma duodenale.* The day before he gives a large dose of castor oil, or orders an enema for debilitated patients, but the former is more efficacious. Rice is the only article of diet which need be restricted. He has never observed any unfavorable effects from this treatment except drowsiness. This mode of treatment is of great advantage when the number of hospital beds is small, while at the same time the patient can be under observation. With this new treatment there are no ova and very few parasites in the stools after two doses have been given. Some cases, but not all, were completely cured after one dose, but only when castor oil had been taken for several days before the anthelmintic was given. (The equivalent of 40 grams of castor oil would be about one ounce and two drams, rather than three ounces as stated.—J. B. M.)

Department of Pharmacy.

Conducted by H. V. ARNY, Ph.G., Ph.D.

Pharmacology of Agar-Agar: An interesting article on this subject appears in *American Druggist, 56,* 291. After mentioning the history of the substance, its composition (chiefly the carbohydrate gelose), its use as a culture medium and in toilet preparations, the article proceeds to explain its modern uses in habitual constipation, quoting Gomperz's satisfactory results in administering the substance to patients in 15 gram doses morning and evening. The article closes with mention of the fact that the proprietaries Cascara-agar Jelly and Regulin are combinations of the substance with extract of cascara sagrada; that Laxigen consists of agar, sugar and phenolphthalein; and that Rhamnagar consists of agar and extract of buckthorn.

Coryza Nasal Suppositories: *La Quinzaine Therapeutique* (through *Pacific Pharmacist, 3,* 482), gives a recipe calling for, oil cassia two drops; oil anise three drops; oil eucalyptus three drops; oil thyme three drops; crystallized phenol, camphor, menthol, each 0.15 grams; oil theobroma enough to make six suppositories. One suppository is to be inserted into each nostril at bedtime.

Etymology of Antimony. It has been long known that the story that the word means "antimoine"—against the monk—is a pleasant fable, and now Schelenz (*La Nature,* through *Druggists Circular, 54,* 262) says it comes from the Arabic word "Alhmoud," which gradually changed to "althimodium," to "athimodium" and then to "antimonium."

Mercuric Iodid Oil: The new French Codex directs a mercuric iodid oil made by dissolving 0.2 gram of the iodid in 46 grams sterilized olive oil. Lemaire (*Pharm. Zeitung,* through *Southern Pharmaceutical Journal, 2,* 398) prefers poppy-seed oil since it is a better solvent; and he also finds that castor oil further increases the solubility of the iodid. His recipe calls for: mercuric iodid, 1.0 gram; sterilized castor oil, 50 c.c.; guaiacol, 3.0 grams; sterilized poppy seed oil to make 100 c.c. This, it will be noted, is two and one-half times stronger than the oil of the Codex.

Removing Stains from Hands: Richter (*Ap. Zeit.,* through *Retail Druggist, 17,* 197) suggests the following solvents for the stains on fingers from microscopic stains. Tincture of green soap removes phenol-fuchsin, phenol-thionine, cresyl-violet, Geima's solution, Leischmann's blood color, methylene blue, orcein water blue, and polychrome methylene blue; phenol gentian violet is removed with absolute alcohol; Ehrlich's triacid solution and Esbach's reagent, with equal parts of hydrogen dioxid and ammonia water; while Delafield's hematoxylon solution is washed off with equal parts of hydrogen dioxid and diluted hydrochloric acid.

Liquefaction of Salol: The following combinations of salol with other crystalline chemicals liquefy on trituration:

Salol and menthol liquefy when combined in equimolecular proportions. Two molecules of salol and three molecules menthol give a damp powder; while one molecule salol and three molecules menthol give a dry powder.

Salol and camphor in all proportions give either a liquid or paste.

Salol with either phenacetin, antipyrin or salicylic acid gives a dry powder, but if a trace of camphor is added to either mixture, liquefaction results. Salicylic acid and camphor give a dry powder.

Salol and thymol give either pastes or liquids.

One molecule of salol and two molecules of chloral hydrate give a moist powder and likewise with three molecules of salol and two molecules chloral hydrate. In other proportions a dry powder results. Salol and resorcinol give a dry powder in any proportion but a trace of antipyrin causes liquefaction.

Either beta-naphthol, pyrogallol or sodium salicylate gives a dry powder with salol.

So reports R. J. Wotring (*American Journal of Pharmacy, 82,* 241), and it might be well to append that the molecular weight of salol is 212.47; of menthol is 154.98; of chloral hydrate is 164.12.

Casimiriron Edulis: This rubiaceous plant called in Mexico, Zapote blanco, is used in South America as an algetic and hypnotic, in doses of one to two teaspoonfuls, the hydroalcoholic fluidextract producing quiet and natural sleep in two or three hours. Robin and Coyan (*Bull, gen. Ther.*, through *Chemical Abstracts, 4,* 1189).

Academy of Medicine of Cleveland.

OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION.

The forty-seventh regular meeting was held at the Cleveland Medical Library, Tuesday, April 22, 1910, E. Lauder in the chair.

C. C. Stuart reported a case of peculiar infection of the conjunctiva, which did not correspond to any of the rare forms of conjunctivitis and was probably of animal origin.

E. Lauder reported very satisfactory results by the Fergus method for ptosis and showed photographs of one case before and after operation.

W. E. Bruner reported a case of injury to the eye by the bursting of an incandescent lamp globe. The radiographs which he exhibited showed that at least that kind of glass (lead glass) could be localized by the x-ray.

CLINICAL AND PATHOLOGICAL SECTION.

The sixty-ninth regular meeting was held at the Cleveland Medical Library, Friday, May 6, 1910, J. S. Tierney in the chair.

The program was as follows:

1. Chronic Tetanus, Report of Cases, A. N. Dawson. (To appear in full in the Journal.)

2. Value of Tuberculin in the Diagnosis and Treatment of Surgical Tuberculosis, Walter G. Stern. (Appearing in full on page 421.)

R. A. Bolt agreed that the textbook illustrations usually exaggerated the intensity of the reaction. He had seen many reactions in children under three years of age; they were usually mild although some were very marked with a dark red areola. A reaction could often be determined more readily by touch than by sight, especially in colored children, the infiltration being plainly palpable. Although the newborn did not react, this did not prove the non-existence of congenital tuberculosis. Some 20 congenital cases had been reported in which bacilli had been found in the mother, placenta and infant. In such cases the disease was usually miliary and the reaction was rare in this condition. Very early cases, also, did not react but later the test in them might prove positive. In advanced cases, such as meningeal involvement, there was usually no reaction. The presence of measles and whooping cough might prevent a reaction but later the test might prove positive. With a positive reaction in children under three years, one could be certain of tuberculosis. In children the ophthalmic test was unsatisfactory as the child usually cried and the tears would wash out the tuberculin, in addition the danger of iritis was considerable.

J. E. Tuckerman asked whether the presence or absence of fever had any effect upon the intensity of the cutaneous reaction.

E. O. Houck asked why the speaker advised the sewing up of the incision without drainage after evacuating the pus from caseous tuberculous glands of the neck.

W. A. Schlesinger asked what dosage the speaker advised in the administration of tuberculin.

W. G. Stern, in conclusion, said that in one of the large obstetric clinics a long series of cutaneous and eye tests in the newly born had been followed by no positive reactions. These results had been so uniform that the conclusion seemed warranted that the new born were free from tuberculous infections and for this reason regarded as very good controls.

While v. Pirquet obtained 80% of positive reactions in his Vienna clinic and another writer got almost 90% in a squalid, poverty stricken, workingman's quarter in Berlin, he believed these figures to be approximately a true estimate of the tuberculous infections in these places. While he had no doubt that 80% of the children coming to v. Pirquet's clinic had tuberculosis, this was not a fair estimate of the prevalence of tuberculosis against children in more favorable (hygienic and social) localities. In the Jewish Orphan Asylum in Cleveland where a goodly percentage of the children had come from tuberculous homes he had found very few (not more than 3%) with tuberculosis and only these few children who had the infection had given positive reactions when tested by his combined methods. The local reaction was not affected by a rise in the temperature of the patient. He advised the sewing up of the wounds after evacuating the tuberculous necrotic glands since there was usually no pyogenic infection and healing took place readily. In treatment he began with a dosage 0.00001 mg. of tuberculin which was gradually run up to 0.01 mg. if no reaction took place. There was no danger from the v. Pirquet test if care were used. The abrasion should be small and carefully and antiseptically made and a tiny amount of tuberculin used; if large drops were used or rubbed in too vigorously a general reaction might occur.

COUNCIL MEETINGS.

The Council of the Academy met Monday, April 18, 1910.

R. L. Jett was elected to active membership. The following names were ordered published: E. P. Coppedge and Clinton H. Bell.

The names of delinquent members were read. It was decided that all delinquent members be notified that they would be given until May 1, to pay all arrears or be suspended.

The following resolution was adopted:

Whereas, There has been offered in the Senate of the United States a Bill, S. 6049, whose purpose is the creation of a National Department of Health, and

Whereas, Such a Department is a necessity for the conservation of human health and life; for the coordination and broad direction of such medical services as are already active in the Government; for the proper control and regulation of quarantine; for the limitation and control of infectious diseases; for the study of matters relating to hygiene in its broadest sense; and for the collection of data needful for the guidance of State and municipal health authorities; therefore, be it

Resolved, By the Council of the Academy of Medicine of Cleveland, that the Academy of Medicine of Cleveland expresses itself as being entirely in favor of the establishment of a United States Department of Health and as most earnestly desiring the passage of the measure, S. 6049, now before the United States Senate.; and be it further

Resolved, That, in order that this expression of the Academy of Medicine of Cleveland may come before those entrusted with the representation in Congress of its constituent members, copies of these resolutions be forwarded to the United States Senators from Ohio and to the Representatives in Congress from the Twentieth and Twenty-first Congressional Districts of Ohio.

The Council of the Academy met Saturday, May 28, 1910.

The following were elected to active membership: C. H. Bell and E. P. Coppedge.

The following names for active membership were ordered published: Lawrence A. Pomeroy and William Chambers.

The Secretary was instructed to present to the Mayor of Cleveland the Council's approval of the following:

To the Board of Directors of the Antituberculosis League:

Your committee appointed on January 1, 1910, to investigate the Warrensville and Scranton Road Tuberculosis Hospitals, and the tuberculosis situation in general in the city, begs to submit the following report:

Your committee has visited the Scranton Road and Warrensville Sanatoria, has conducted investigations to determine the total number of cases of human tuberculosis in Cleveland, has consulted the literature pertinent thereto, and has had interviews with numbers of the leaders in the antituberculosis movement in this country.

At the recent meeting of the National Society for the Prevention of Tuberculosis, held in Washington, several members of your committee consulted various experts in regard to both general and specific aspects of the tuberculosis problem. One member of the committee has made a critical study of the plans and progress of the tuberculosis movement in New York, Boston, Pittsburg and Buffalo.

Your committee regards it of prime importance that the total number, distribution and stage of the cases of tuberculosis in Cleveland should be determined as soon as possible. Your committee finds that this can be done with reasonable accuracy only by means of a survey carried on by nurses.

It is impracticable and misleading to apply to Cleveland the estimates and assumptions of the conditions in regard to other cities. By multiplying the known annual death rate from tuberculosis by the term of years stated by various authorities as the life expectancy of persons with diagnosticable tuberculosis, the figures for Cleveland vary from 3,000 to 6,000 cases. According to the statistics of the League's Tuberculosis Dispensary, 29% of our cases are incipient, or first stage cases, and 71% are second and third stage cases. At least 80% of the whole number of cases may be regarded as centers of infection for others. Of the 1906 recorded positive cases of tuberculosis on the dispensary list during the period of five and one-half years, between October, 1904, and March, 1910, 760 cases are dead.

Your committee finds that your tuberculosis dispensary, though fairly well equipped and efficiently conducted, is totally inadequate to carry on the work which the conditions in Cleveland demand. Its quarters should be enlarged and its staff augmented. It is particularly weak in nursing force, the number of nurses being entirely inadequate properly to carry on the work which presents itself.

The registered cases at the Health Office are derived, in large part, from the registers of your dispensary and of the City Bacteriological Laboratory. Physicians and heads of families are entirely too negligent in reporting cases to the Health Office in compliance with the law.

In the opinion of your committee, the dwellings of all persons who are disseminating tubercle bacilli should be frequently and efficiently disinfected, and such individuals should be instructed in what ways and to what extent they are dangerous to others.

Your committee found, on inspection and investigation, that the pavilion of the Scranton Road Hospital for advanced cases of tuberculosis was scrupulously clean, well ordered and, generally speaking, intelligently conducted. In this pavilion, together with the small reception ward in the City Hospital proper, about 115 advanced cases are cared for. There is a long waiting list of patients anxious for reception in this hospital. As pointed out by the superintendent, and heartily concurred in by your committee, admission to this pavilion should be granted only to the most advanced cases, and particularly to those whose removal to the hospital will serve to eliminate the most dangerous sources of infection. In the opinion of your committee this condition can be most effectively met by requiring all candidates for admission to this pavilion to be recommended by the Tuberculosis Dispensary, after proper examination and investigation.

As the hope of checking the spread of tuberculosis depends in largest degree upon the elimination of foci of infection, particularly in homes, it is evident that one of the most important present needs in the fight against tuberculosis in Cleveland is a considerable increase in the accommodations for the care of advanced cases of tuberculosis at the Scranton Road Hospital.

When the Tuberculosis Sanatorium at Warrensville for the treatment of early cases was visited by the members of your committee in April, it was found that, when the conditions of situation, structure and construction are considered, the sanatorium is fairly well conducted. It accommodates 80 patients.

This institution, designed originally for the arrest and cure of incipient cases, has, until the last few months, admitted cases in all stages of the disease. Since, however, admission to the Sanatorium has been restricted to those cases recommended by the Tuberculosis Dispensary, admission has been confined to the proper class of cases.

It is evident that the organization of this institution is incomplete, especially in that it lacks the constant advice, stimulus and control of experienced medical visitors, who would come into more intimate contact with the resident physician and the patients.

In the opinion of your committee the present functions of this sanatorium are, primarily, curative; secondarily, educational—to teach the people that tuberculosis can be cured, and as an object lesson in the modern methods of treatment and prevention of this disease.

From its study of the situation as a whole, it is evident to your committee that the various activities of the League, of other organizations, and of the city, notably in the conduct of the latter's hospitals for tuberculosis and of the Health Department, lack that intimate and efficient cooperation and correlation which are essential for the rapid and economical control and ultimate eradication of tuberculosis.

It is further evident that, as at present organized and undermanned, the Health Department is not prepared to carry out its part of the work properly.

Tuberculosis is a chronic, pandemic plague, the essential and predisposing causes of which are fairly accurately known. Under the conditions of urban life it tends to spread and not to die out, unless special and appropriate measures are consistently and painstakingly pursued.

Its very chronicity augments its expense to any community, and even a small decrease in the number of new cases not only diminishes suffering and privation, but saves thousands of dollars per year.

The cause of the disease—the tubercle bacillus—is carried from one human being or animal to another, chiefly by the secretions and discharges of the body. Each individual with a discharging tuberculous lesion is a center for the spread of the disease to others. Temporary or permanent lowering of the vitality, due to inheritance, acute and chronic diseases, overwork, unsanitary living and working conditions (especially overcrowding, lack of ventilation and sunlight) all act as important predisposing causes. These latter are, largely, sociological conditions, but, in large part, fall under the jurisdiction of the Department of Health.

Were tubercle bacilli not disseminated by those afflicted with the disease, the plague could not spread and would die out.

The control of the spread of the tubercle bacillus, the essential cause of the disease, is clearly a function of the Department of Health.

The study of the history of tuberculosis shows clearly that its diminution in any community bears a direct relation to improvement in hygiene and sanitation under the direction of the Department of Health.

It is evident, therefore, that the Health Department is the proper center for the prevention of the disease and the correlation of all activities necessary for its control and eradication.

In the opinion of your committee there should be established in the Health Department a subdivision for tuberculosis. This subdivision should have absolute power in the control and direction of all the work done by the city government in the detection and registration of cases of tuberculosis, in the disinfection of homes and places of work, the care and collection of sputum, the administration of tuberculosis dispensaries, and the admission, dismissal and following up of patients in city institutions for the care of the tuberculous. This subdivision should, in all practicable ways, instruct the various departments of the city government, as well as the citizens in general, in all matters pertaining to the spread and prevention of tuberculosis.

To these ends, it is especially urged that the city establish a dispensary, or dispensaries, with a proper complement of physicians, nurses and other help, to carry on this work. In such a plan it is of vital importance to have the services of a sufficient number of nurses. Under certain conditions it might well be advisable in the tuberculosis work to use the services of district, school and other nurses. The essentially important object to be obtained is efficient detection and oversight of cases through the activities of trained nurses, acting under the direction of the Health Department and in association with the dispensary.

The following scheme for organization and estimate of cost would, in the opinion of your committee, be appropriate for this work:

Scheme of Operation

Chief of department.
Clerk and stenographer.
Six physicians for dispensary clinics.
One head nurse and 10 assistants.
One clerk.
Municipal dispensary.
Janitor.
Cleaning woman.
Disinfecting.

Estimated Cost

Chief of department	$ 3,000.00	
Clerk	900.00	
Stenographer	720.00	
Six physicians, 8 hrs. a week	2,500.00	
Head nurse	1,200.00	
Ten assistants	10,000.00	
One clerk	720.00	
Dispensary rental, light, heat, etc., and janitor service	2,000.00	
Cleaning woman	400.00	
Napkins, paper bags, and s. c. medicine, milk, 100 window tents	1,600.00	
Disinfecting	3,000.00	
Educational	2,000.00	
		$28,040.00

The problem is one of such enormous proportions and of such wide ramifications that it is not possible for any private organization, or group of such organizations, to obtain the financial and legal means necessary to accomplish the desired results. A proper conception of the solution of the problem for the arrest and final eradication of tuberculosis in Cleveland must take into account not so much the treatment and cure of isolated individual cases, but a comprehensive general plan of campaign, all the elements of which are sufficiently strong and adapted to this work to act upon all the various factors involved. The chain must be strong in all of its links; there must be no flaws and gaps in the plan of campaign by which energy, money and time are wasted and false security aroused. For example, it is manifestly illogical to undertake the fight without first ascertaining the position of the enemy. In the tuberculosis fight this can best be accomplished through dispensaries, physicians and nurses. It is inadequate to supervise cases of tuberculosis in the homes and neglect them in places of work, and vice versa. The removal of a dangerous case from the home is but a part of the plan for the prevention of the disease to those exposed. Both energy and money are wasted unless the premises are thoroughly disinfected, and those exposed are examined and instructed concerning proper methods of living and of avoiding the disease.

It is important to concentrate adequate effort upon the control of tuberculosis in certain trades, such as cigar-making and printing, which furnish so many foci of infection.

It is of the greatest importance that those afflicted with and those exposed to the disease be thoroughly instructed orally and by means of printed matter in the protection of themselves and of others.

Some provision must be made for open air schools and for fresh air camps.

Street dust is a common vehicle for transporting the germs of tuberculosis, as well as germs causing diseases that predispose to it. Therefore, more adequate methods of street cleaning should be inaugurated. This particularly applies to the places in the center of the shopping and office districts of the city where such a large proportion of our population comes daily.

Recommendations.

As a result of its study and investigations, your committee makes the following recommendations:

First: The establishment, at once, within the Department of Health, of a subdivision of tuberculosis, with the scope, force and equipment of dispensaries, physicians and nurses, as above outlined. In the opinion of your committee this is of paramount importance, and this subdivision should be the center for the development of all the activities in the fight against tuberculosis.

Second: The construction at Warrensville of an adequate modern institution for the care and treatment of tuberculosis in the various stages of the disease. In the future development of the Warrensville Sanatorium provision should be made to permit and to encourage private organizations and associations to erect and to conduct, under the supervision of the city authorities, pavilions and camps for the treatment of tuberculosis individuals supported by them.

Third: It is advisable to promote the establishment in convenient localities of day and night camps for tuberculous individuals.

Fourth: It is advisable to enlist the cooperation of the School Board in the establishment and development of open air schools for tuberculous children, and to provide open air school rooms for the anemic and predisposed children.

Fifth: It is necessary that the city government require the owners or occupants of property of the down town district to wash their sidewalks at least once a day with running water."

J. H. Lowman, M. D.,
W. T. Howard, M. D,
P. V. Harvey,
R. H. Bishop, Jr., M. D.

Book Reviews.

Diseases of the Stomach and Intestines. By Robert Coleman Kemp, M. D., Professor of Gastro-intestinal Diseases, New York School of Clinical Medicine. Octavo of 766 pages, with 279 illustrations. Philadelphia and London; W. B. Saunders Company, 1910. Cloth, $6.00, net; Half Morocco, $7.50, net.

A special endeavor of this volume is to serve the general practitioner in selecting simple and practical methods. This purpose, as given in the preface, is to be worked out in demonstrating methods of diagnosis and treatment with the free use of illustrations, largely obtained by photography. This purpose, especially as concerns diagnosis, seems to have been better accomplished than in the texts heretofore coming under the reviewer's notice.

An index of 66 pages is a valuable feature and worthy of especial commendation.

As to the text itself, occupying about 700 pages, it presents clearly an apparently complete survey of the methods and procedures in use in the field covered. The writer is at his best in the presentation of the more scientific side of the subject. The descriptions of anatomy and physiology are unusually succinct, and applied relations are woven into the text in the manner of a trained teacher with a definite purpose. The reading of these chapters cannot but be helpful to a great number of practitioners who are dissatisfied with their present knowledge and means at hand for enlarging it.

The text upon diagnosis and treatment is as a whole clear and commendable. The writer, however, seems to have lost something of his impersonal and delightful attitude and to catalogue procedures at considerable length, with personal preferences expressed it is true, but with less of the force and admirable manner alluded to above.

The wisdom of including inadequate descriptions of surgical measures in a text for general practitioners is questionable, possibly it may be that such photographs and descriptions as that of gastrectomy on pages 263 and 264 are really useful. Will the day come when writers will cease to label each little contrivance with their names and furnish us fewer pages like page 431?

As a whole the book seems well fitted to its purpose and is likely to be as useful and popular as any book in its field. J. P. S.

Physiology and Pathology of the Semicircular Canals. Being an excerpt of the clinical studies of Dr Robert Bárany with notes and addenda gathered from the Vienna clinics by Adolph E. Iberschoff, M. D., and Royal S. Copeland, A. M., M. D. Paul B. Hoeber, New York, 1910. Price, $1.00, net.

This little book of 65 pages, as stated by the author in his preface, is the first publication in this country of the epoch-making investigations of Neumann, Bárany and others at the Vienna clinic in regard to the normal function, as well as the pathology, of the semicircular canals. To one who has followed this recent work and who is fully appreciative of its value as affecting the diagnosis and treatment of diseases of the inner ear, the appearance of this work in English must indeed be a gratification. To others less acquainted with the subject the present booklet will contain much that is new, startling, and of decided value. The book is concise, accurate, clear and excellently written. To one acquainted with the recent monographs of Neumann and Bárany as well as the teaching of the Vienna clinics it is a model of careful, accurate condensation.

Possibly the sections dealing with differential diagnosis and cerebellar involvement consequent to middle ear disease have been condensed a trifle at the expense of clearness. It might prove difficult reading for one unfamiliar with the subject matter. This book should certainly be in the hands of every otologist. The practitioner will also find it of decided value. The author is to be congratulated on the successful performance of a difficult task. Not the least valuable part of the book are the excellent diagrams and illustrations. W. B. C.

Anatomy and Physiology for Nurses. By LeRoy Lewis, M. D., Surgeon to and Lecturer on Anatomy and Physiology for Nurses at the Lewis Hospital, Bay City, Michigan. Second Revised Edition, 12 mo. of 344 pages, with 161 illustrations. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $1.75 net.

In writing a textbook on anatomy for nurses, the author should make its language simple yet comprehensive, and give sufficient of the practical application of the subject to make it interesting. Too great detail should be avoided, as it is impossible to expect nurses to learn the finer points of anatomy, without giving them opportunities for careful dissection. In the present book Lewis has given his description in such detail, and so little of the practical application of anatomy to nursing, that his readers would find it very difficult indeed to become interested in the subject. Even the origin, insertion, action, and nerve supply of the small muscles of the hand are given. How long would the average nurse remember this and of what practical use would it be in her profession if she did learn it? It certainly would be much more important for her to know the location of bony prominences over which bedsores would be likely to develop, than to learn the origin, insertion, action, and nerve supply of the opponens minimi digiti muscle.

The book is well illustrated but it seems to the reviewer that it would more appropriately serve as an elementary textbook for medical students.

J. P.

Some Common Remedies and their Use in Practice. By Eustace Smith, M. D. Fellow of the Royal College of Physicians; Senior Physician to the East London Hospital for Children; Consulting Physician to the Victoria Park Hospital for Diseases of the Chest. Paul B. Hoeber, New York.

This little book contains chapters on the clinical use of such common drugs as tartarated antimony, oil of turpentine, iron, the alkalies, opium and sodium salicylate. Such a book will indeed be welcomed in these days when every mail brings a notice to the physician of some new remedy, which in most cases proves to be of little clinical value. The reader will notice many statements which are somewhat at variance with the teaching of the ordinary textbook, but they are based on the broad experience of the author and are worthy of consideration. The reviewer would object strongly to his advocacy of the use of salicylates in appendicitis. Even if we grant that some cases of this disease are rheumatic in origin, it would be impossible to differentiate them from the non-rheumatic cases, and the time lost in trying the salicylates would be sufficient for an acutely inflamed appendix to perforate. J. P.

Diseases of the Skin. A Manual for Students and Practitioners. By Alfred Schalek, M. D., Professor of Dermatology, University of Nebraska; formerly Assistant Professor of Dermatology, Rush Medical College, Chicago. New (2d) edition, thoroughly revised, 12 mo., 255 pages, with 47 engravings. Cloth, $1.00, net. The Medical Epitome Series. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

This is a small book of 245 pages. The first few pages are devoted to a brief anatomy and to general considerations of the skin. Then follows a brief outline of the important features and treatment of each disease.

The diseases are arranged alphabetically. The book is illustrated by a number of photographic reproductions, many of them taken by the author. The work partakes more of the character of a quiz compend than of the textbook. The diseases are too superficially treated for this book to be used without reference to other books. W. C. G.

The Sexual Life of Woman in its Physiological, Pathological and Hygienic Aspects. By E. Heinrich Kisch, M. D., Professor of the German Medical Faculty of the University of Prague; Physician to the Hospital and Spa of Marienbad; Member of the Board of Health, etc. Only authorized translation into the English language from the German by M. Eden Paul, M. D. With 97 illustrations in the text. Price, cloth, $5.00. Rebman Co., New York.

This work consists of a compilation of articles that have appeared from time to time, supplemented with many statistical tables and some original observations. It may be added to that shelf already well filled by the books of von Krafft-Ebbing, Havelock Ellis, and others.

The volume is well arranged, sufficiently illustrated and probably contains more than the usual amount of therapy that one is accustomed to find in such a work. J. M.

The Conquest of Consumption by Woods Hutchinson, A. M., M. D. Houghton Mifflin Co., Boston, Mass. Price, $1.00 net.

This little volume deals simply, clearly and hopefully with a problem whose future solution will come through a thoroughly educated public. The book by reason of its penetrating good sense and healthy cheerfulness is an excellent instructor for the laity, and a valuable asset to the physician who must constantly aid in bringing this subject wisely before the public.

H. H.

Hygiene of Pregnancy. By E. S. Harris, M. D., Higginsville, Mo.

This is a small pamphlet of 23 pages, designed as a guide for the patient herself during pregnancy and the puerperium. It contains such practical advice concerning the management of pregnancy as a physician usually gives to his waiting patient, and includes a list of articles for the baby's outfit.

While not as complete as some books of this kind such a pamphlet should undoubtedly be an aid to the patient in following the physician's directions. A. H. B.

Acknowledgments

The Health of the City. By Hollis Godfrey, author of "An Elementary Chemistry," etc., etc. Houghton Mifflin Co., Boston and New York.

Index of Symptoms. By Ralph W. Leftwich, M. D. Fourth edition. Messrs. William Wood & Co., New York. Price, net $2.25.

Bulletin of the American Academy of Medicine, Vol. 10, 1909.

Proceedings of the Third Annual Meeting of the Association of Life Insurance Presidents. Held in New Willard Hotel, Washington, D. C., Jan. 19-20, 1910.

New York State Department of Health. Extract from the Thirtieth Annual Report, 1909.

State of New York. Report of the Ninth Annual Conference of Sanitary Officers. 1909.

Public Health and Marine-Hospital Service of the United States. Bulletin No. 60.

Public Health Reports, Vol. XXV, No. 12.

Fourteenth Annual Report of the State Medical Board of Ohio for the year ending December 31, 1909.

First Annual Report of the Free Out-Door Maternity Clininc conducted at 216 E. 76th street, New York, by Mr. John E. Berwind and Dr I. L. Hill. Covering the nine years of the Clinic's existence.

Reprints by Emil G. Beck, Chicago, Ill.; Edwin G. Rust, Cleveland; Charles H. Goodrich, Brooklyn, N. Y.; John W. Trast, United States Public Health and Marine-Hospital Service; Dudley Roberts, Brooklyn, N. Y.; Cesare Frugoni, Paris; C. Frugoni and G. Stradiotti, Berlin.

Medical News.

A. H. Bill and R. A. Bolt were elected Chairman and Secretary, respectively, of the Section of Obstetrics and Pediatrics of the State Association at the recent meeting in Toledo.

J. R. Beiter and I. H. Fuhs, recently on the House Staff of Lakeside Hospital, have located in Canton.

A. N. Dawson has opened offices at 112 Lennox Bldg. and at his residence, 15617 Detroit Ave.

L. O. Davenport, recently on the house staff of Charity Hospital, will practise in Ashtabula.

The graduating exercises of the Training School for Nurses of St. Luke's Hospital were held at the Euclid Ave. Methodist Church, Thursday evening, April 28. Bishop David H. Moore delivered the address of the evening.

The graduating exercises of the Lakeside Hospital School for Nurses were held at the hospital, Friday, May 27. The address to the graduating class was given by Charles S. Scudder of Boston. The diplomas and prizes were presented by Gen. George A. Garretson.

The Lakeside Hospital Medical Society held the forty-eighth monthly meeting on Wednesday, May 25. The program was as follows: 1. Demonstration of a Case of Reduced Congenital Dislocation of the Hip Treated Without the Use of Plaster, H. O. Feiss. 2. Presentation of a Case of Still's Disease, J. McLachlan. 3. Presentation of a Case of Multiple Sclerosis, S. Wyatt. 4. Presentation of a Case of Hernia of the Umbilical Cord, C. E. Briggs. 5. Presentation of a Case of Injury to the Head with Aphasia, V. C. Rowland. The following officers were elected for the coming year: President, D. P. Allen; Vice-president, J. Phillips; Secretary, H. Rhu.

Elizabeth P. Upjohn, formerly Directing Nurse of the Tuberculosis Dispensary in this city and one of the first nurses on the staff of the Visiting Nurses Association of Cleveland, died at sea last month while on her way to Holland. In 1904 she made a preliminary investigation of the tuberculous poor of Cleveland, thus preparing the way for the successful work of the Tuberculosis Dispensary which opened in October of that year. In 1907 she left Cleveland to organize the municipal nursing of the tuberculous poor of Boston where she had charge of the staff of 20 nurses engaged in this work. The loss of such a valued and experienced worker is to be deeply deplored.

The new building for the Babies' Dispensary at 2500 East 35th St. has been begun. It is expected that the dispensary and milk laboratory will be completed within six months.

J. Leon Jones and Lola Huffman, students at the College of Physicians and Surgeons, were attacked with smallpox after visiting the smallpox hospital at Warrensville. The attack was light in each case and they were both able to take their college examinations at the hospital.

The annual commencement of the Medical Department of the Ohio Wesleyan University was held at Epworth Memorial Church, Tuesday, May 30. Rev. Ward B. Pickard delivered the class address.

The following is a list of the graduates: Nina L. Allen, Sebe D. Austin, Edythe A. Bacon, Norris L. Coy, Maurice Feiman, Charles H. Franks, Moses Garber, Ralph E. Henry, James D. Hobson, J. L. Jones, Wayne P. Mecklem, Frank H. Mohrman, Clarke C. Patton, Ralph W. Reynolds, Frederick W. Riley, Herman Shube, William J. Thornton, Franklin F. Walters, Philip R. Wolinsky, Minosuke Yamaguchi, Isidore Zwick.

The smallpox epidemic in Cleveland seems to be fairly well under control. So far there have been 48 cases and of these, eight, all unvaccinated, have died. With the exception of two cases, one from Alliance, O., and the other from Superior, Wis., all the cases apparently originated from a single focus of infection in the Polish quarter of the city. The disease has been of rather a malignant type. The city authorities have vaccinated about 40,000 persons, mostly public school children, and from the sales of vaccine by the dealers it is estimated that some 100,000 individuals have been recently vaccinated. No serious results from the vaccination have been reported although in a few cases the ignorance of the parents has prompted them to remove the protective dressings applied by the physician and to apply mullein leaves or other "home remedy;" in such instances there have been some rather sore arms.

Gustav C. E. Weber celebrated his eightieth birthday on May 26. As a teacher he was a firm believer in clinical methods and was an earnest student of pathology which he regarded as of the utmost value in the practical application of medicine. In his day he occupied a unique position in medical circles in this city and was indefatigable in the activities of his professional life. He was undoubtedly the greatest surgeon of this part of the country and it was due mainly to his efforts that Charity Hospital came into existence. A number of his former associates took the opportunity of his birthday to visit him at his home in Willoughby.

The Ashtabula County Medical Society held the fifty-third regular meeting at Ashtabula, Tuesday, May 3. J. A. Dickson read a paper upon The Frequency and Importance of Adenoids in Children.

John K. Tressel, who recently moved from Alliance to Jefferson, Wis., will return and open an office in the Taylor Block, Alliance.

Homer Scranton, Alliance, has removed his office to the First National Bank Bldg.

The Stark Co. Medical Society met in Canton, May 17. The program was as follows: 1. Complications and Sequelae of the Exanthemata, H. H. Bowman, Canton. 2. Some Thoughts on Life Insurance from a Practical Standpoint, C. E. Schilling, Canton. 3. Diagnosis of Extra-uterine Pregnancy, N. W. Culbertson, Massillon.

C. H. Browning, Oberlin, has returned from a two months' vacation in Florida.

The Erie Co. Medical Society met in Castalia, May 25. The following program was presented: 1. Graves' Disease, P. F. Southwick, Sandusky. 2. Diagnosis and Treatment of Dislocations of the Larger Joints, W. H. Pollock, Huron. 3. Observations upon Some of the Eastern Hospitals, C. C. Davis, Sandusky.

H. C. Schoepfle, Sandusky, who has been seriously ill with rheumatism for the past two months, has so far recovered that he will soon be able to resume practise.

Carrie Chase Davis, Sandusky, has returned from a three weeks visit to the Washington, D. C., hospitals.

The Muskingum Co. Medical Society presented the following program at the May meeting: 1. Some Skin Lesions, H. F. Lorimer. 2. Report of the State Meeting, H. T. Sutton; W. A. Melick, E. C. Brush, W. C. Klemm, and J. G. F. Holston, Jr., also reported on the meeting. 3. Report of a Case of Gangrene of the Foot, E. C. Brush; the gangrene occurred in a man aged 72, following the use of a corn plaster and required amputation. 4. Report of a Case of Ectopic Pregnancy in a Girl of Sixteen, C. H. Higgins. 5. Report of a Case of Foreign Body in the Popliteal Space, W. C. Bateman; this proved to be a piece of glass 1½ x ½ inches which had been in the popliteal space for four months and caused no special inconvenience. 6. Report of a Case of Foreign Body in the Head of the Tibia, R. B. Bainter; this was a metal hook 1½ inches long, used to fasten machinery belts, and had been imbedded one inch in the bone for three years. 7. Report of a Case of Pregnancy with Prolapsed Cord, J. G. F. Holston. 8. Report of a Case of Tubal Pregnancy with Recovery, J. C. Crossland. 9. Report of a Case of Normal Delivery Followed in One Week by Death from Unknown Cause, G. Warburton. The following resolutions were passed:

Whereas, certain irresponsible persons are circulating reports in regard to the number of typhoid fever cases in this city, and

Whereas, such false reports disturb and cause fear among our own people and are detrimental to our city in many ways, therefore be it

Resolved that we request the local newspapers to make no statements in the matter unless substantiated by the statistics in the hands of the Secretary of the Board of Health.

Meetings of the Academy of Medicine of Toledo and Lucas Co.:

The Surgical Section met Friday, April 22. The program was as follows: 1. A New Method of Gastrostomy, J. S. Pyle; discussion opened by W. G. Gillette. 2. The Results of Prostatic Hypertrophy and Their Treatment, J. G. Keller; discussion opened by R. S. Walker.

The Eye, Ear, Nose and Throat Section met Friday, April 29. The program was as follows: Nasal Suppuration; Remarks on Systemic Causes and Effects, with Stereopticon Illustrations, Thos. Hubbard; discussion opened by O. Landman and H. W. Dachler.

The General Meeting was held Friday, May 6. The meeting was devoted to hearing the reports from the chairmen of the various committees having charge of the entertainment of the State Association.

The Section on Medicine met Friday, May 20. The program was as follows: 1. Demonstration of a Case of Imperforate Anus, C. F. Tenny. 2. Vulvovaginitis in Little Girls, H. E. Smead; discussion opened by G. L. Chapman. 3. The Question of Hysterical Fever, L. A. Levison; discussion opened by L. Miller and F. D. Fearneau.

Jeremiah Metzger of Toledo, is taking a postgraduate course in skin diseases in New York. During his absence his practise has been assumed by J. L. Courtright, late of the New York Skin and Cancer Hospital.

At the recent meeting of the Ohio State Medical Association in Toledo the total registration was 645, of which 507 was from outside Lucas Co., Cuyahoga Co. sent 50, Franklin 40 and Hamilton 33. The following officers were elected for the coming year: President, R. E. Skeel, Cleveland; First Vicepresident, S. P. Fetter, Portsmouth; Second Vicepresident, E. J. March, Canton; Third Vicepresident, A. T. Speer, Newark; Fourth Vicepresident, J. O. Starr, Pittsburg; Councillor, R. H. Grube, Xenia.

Committee on Public Policy and Legislation: Ben R. McClellan, Xenia; W. H. Snyder, Toledo, and John Thompson, Cincinnati. B. R. McClellan will be the Ohio member of the National Committee on Legislation.

Committee on Publication: Frank Winders and John E. Brown, of Columbus.

Medicolegal Committee: Robert Carothers, Cincinnati; Wells Teachner, Columbus; W. J. Stone, Toledo.

Delegates to the American Medical Association: Geo. M. Todd, of Toledo; B. Blair, Lebanon; Dana O. Weeks, Marion; B. Frank Barnes, Newark; J. W. Clemmer, Columbus.

There was no election for Secretary or for Treasurer, as J. H. J. Upham, of Columbus, and James A. Duncan, of Toledo, have yet two years to serve in those respective positions. Likewise the terms of seven District Councillors extend into next year.

Laverne A. Badger, for 10 years a practising physician of Toledo, has been arraigned before Commissioner Gaines, charged under the name of "Dr Laverne" with using the mails for advertising pills to be used for illegal purposes.

The Toledo District Nurses Association, by means of the "Blue Envelope Campaign," has raised the sum of $8,350 whereby they will establish and maintain a summer camp for babies.

The street=railway company, of Toledo, has mailed circulars to parents and teachers, asking that all children be taught a healthy fear of the cars, thus hoping to lessen the fatality among children from accidents.

Bruce Brockway, Toledo, has been appointed School Inspector at a monthly salary of $75.00. He is Toledo's first School Inspector, and should his work prove successful several other such officers will be appointed.

U. S. Grant Deaton, Toledo, is running on the Republican ticket for State Senator from Lucas County.

The Summit County Medical Society held its regular meeting on May 3. The program consisted of a paper by Thomas K. Moore of Akron on The Etiology of Headache which was very instructive and was freely discussed. The society will have one more meeting June 7, before the summer vacation during the months of July and August.

The Summit County Medical Club held its annual banquet at the Portage Country Club, Akron, on the evening of May 2, at which event Dan Millikin, of Hamilton, Ohio, was the distinguished guest of the Club and addressed those present on "The Irrepressible Savage." The affair was a complete success socially and the address was the best that has been enjoyed by the club in years if not since its organization.

The Summit County Health Protective Society held its quarterly meeting at the First Baptist Church in Akron, May 10. Miss Elsie B. Meade, Akron's district nurse, told of her work among the indigent sick and especially of the work in connection with the Medical Inspectors of the Public Schools. G. M. Logan read a paper reviewing the work done by the Medical Inspectors in the Akron Schools during the past year, pointing out the great need and value of such work, suggesting some changes which if made would make the inspection more effective and urging the use of the school nurse in more cases than she had been used this year. This would necessitate the employment of more nurses. F. H. Lyder, a dentist of Akron, presented a paper showing the need of more buccal hygiene and more intelligent care of the teeth in children of school age. R. H. Bishop of Cleveland, gave an illustrated lecture on tuberculosis in which he told in unmistakable terms how the disease is communicated from one to another, how prevented, and how best cared for in its various stages of infection. After this lecture the speaker was tendered a vote of thanks for visiting Akron and giving such a splendid lecture, and a resolution was passed by the Society urging the County Commissioners to be more active in their efforts in bringing about the completion of the Sanitarium for the treatment of tuberculous patients.

The annual meeting of the trustees of the Akron City Hospital was held at the hospital April 20. All of the former officers were elected. They are O. C. Barber, President; Col. Geo. T. Perkins, Vicepresident; H. J. Blackburn, Treasurer; A. H. Cummins, Secretary. The reports show that the year just closed has been the busiest in the history of the hospital. The hospital was planned for a maximum capacity of 80 patients, but this year there has been a general average of 72 in the house continuously, sometimes as many as 90 have been cared for at one time. Space intended for 12 beds has been occupied by as many as 20. At times many patients that applied for admission could not be admitted.

During the last year 26,505 days nursing were done by the training school—an increase of 5,772 days over last year. The trustees appointed the same members that were on the staff last year, with the additional of Wm. Parks and Robert H. Smith, who were appointed to the Staff of House Physicians and Surgeons.

At the annual business meeting of the hospital staff resolutions were passed regarding the death of Wm. Murdock, former Vicepresident of the staff. The following officers were elected for the ensuing year: H. H. Jacobs, President; L. S. Sweitzer, Vicepresident; J. N. Weller, Secretary.

A reorganization of the Medical Department of Washington University, St. Louis, has been planned on a most complete and thorough basis. This has been rendered possible by the large endowment and gifts which together amount to over $6,000,000. Announcements of the following appointments have been made: George Dock, now of Tulane University, New Orleans, to the chair of medicine; John Howland, of the University and Bellevue Hospital Medical College, New York, to the chair of pediatrics; Eugene L. Opie, of the Rockefeller Institute of Medical Research, to the chair of pathology; and Joseph Erlanger, of the University of Wisconsin, to the chair of physiology.

The recent death of Howard Taylor Ricketts from typhus fever, while investigating that disease in Mexico, removes one of the most valued research workers of this country. Formerly Associate Professor of Pathology in the University of Chicago, he had recently been appointed Professor of Pathology in the University of Pennsylvania. His investigations had already placed him in the foremost ranks in the profession and his untimely death, in the discharge of his duty, called forth the most unusual evidences of regard by the Mexican Government. The laboratory in which he had been working will be named in his honor; the National School of Medicine and allied institutions put on mourning for three days and a special delegation was sent to convey to his widow the sympathy of the Mexican Government.

Army Medical Corps Examination: The Surgeon General of the Army announces that preliminary examination of applicants for appointment as First Lieutenants in the Army Medical Corps, will be held on July 18, 1910, at various Army posts throughout the country. Full information concerning the examination can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." Applications must be complete and in possession of the Adjutant General on or before June 27, 1910. There are at present 123 vacancies in the Medical Corps of the Army.

The United States Civil Service Commission announces an examination on June 15, 1910, to secure eligibles from which to make certification to fill at least two vacancies in the position of medical interne (male), Government Hospital for the Insane, Washington, D. C. Applicants should at once apply to the United States Civil Service Commission, Washington, D. C.

Deaths.

James F. Fitzsimmons, Bucyrus, Ohio, died April 11, aged 66.

Cyrenius G. Clark, Maumee, Ohio, died April 5, aged 77.

Jesse J. Carlow, Gaysport, Ohio, died April 23, aged 81.

John MacCurdy, Youngstown, Ohio, died May 4, aged 74.

Simon P. Putt, Baltic, Ohio, died May 1, aged 56.

J. Van Wagener, Bridgeport, Ohio, died May 6, aged 56.

Isaac P. Farquhar, Zanesville, Ohio, died in Cleveland, May 28 aged 67.

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The Baby in the Tuberculous Home.

By RICHARD A. BOLT, M. D., Cleveland.

In his classic essay on The Contagiousness of Puerperal Fever, Dr Holmes naively remarks that "children that walk in calico before open fires are not always burned to death; the instances to the contrary may be worth recording; but by no means if they are to be used as arguments against woolen frocks and high fenders." With equal, if not greater, force this apt illustration applies to countless babies each year exposed to the flames of the great white plague. While it is true that some by more careful hygienic attention on the part of their parents, or by natural resistive forces, do escape the conflagration, many others not so well shielded are yearly sacrificed upon the altars of the tubercle baccillus.

One does not have to study babies long before it becomes evident that we must go to the social roots of physical disorder to see our problem clearly and to see it whole. This is notably so in trying to deal squarely with the baby in a tuberculous home. In the enlightened home where the baby is ill we may be able to approximate ideal treatment, but in the homes with which many of us are familiar we are often baffled to know just how to handle the baby. This paper is a humble attempt to point out the extent of tuberculosis among children under three years of age, and to venture an answer to some of the perplexing questions which arise in regard to their treatment. It is based largely upon a study of the 349 tuberculous families represented in the 3,439 case records of the Babies' Dispensary and Hospital of Cleveland, where the social as well as the medical aspect of each case has been

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Read before the Section on Obstetrics and Pediatrics of the Ohio State Medical Association at Toledo, May 11, 1910.

thoroughly considered from the first. In order to have a just basis for comparison, the results of other investigators have been studied, and some of them will be presented in abbreviated form.

TABLE I.

Total number of histories reviewed	3,439
Number of tuberculous families	349
Number of babies breast fed	265

	Babies	Mother	Father	Other Children	Relatives
Tuberculous	163	103	131	51	23
Non-tuberculous	193	246	218	554	13
Dead from tuberculosis	50	7	27	19	31
Dead not from tuberculosis	13	2	5	37	—

The extent of tuberculous infection among children under three years of age, while quite difficult to state precisely, is sufficiently wide to merit our most careful consideration. The use of the newer tuberculin reactions, more improved technic in searching for tubercle bacilli in infant's sputum, and in spinal fluid, as well as a wealth of autopsy findings, confirm us in the belief that tuberculosis is an awful scourge of infancy as of maturity.

Under three months of age tuberculosis seems to be quite rare, or at least it does not appear to manifest itself much before that time. Morse[1] estimates the incidence to be from two to six percent. Comby[2], out of 216 autopsies on babies under three months, found four tuberculous. Flesch[3], out of 500 autopsies on children in the earlier months, reports eight showing tuberculous pulmonary cavities. Other observers note correspondingly few cases. It is likely that an appreciable number of the cases appearing so early are of congenital origin. Warthin[4], records about 20 in which tuberculosis of the mother, placenta and child was demonstrated. Practically all these cases die within the first few months. By means of his cutaneous tuberculin reaction, von

	Comby[5]		
Ages	Autopsies	Tuberculous	Per cent
0- 3 months	216	4	2
3- 6 "	216	39	18
6-12 "	254	69	27
1- 2 years	324	140	43

Holt[6]	
Tuberculous	Approximate Percent
5	5
21	21
31	31
39	39

Hamburger and Ghon[7], 318 Autopsies

Age	Percent tuberculous
0- 3 months	4
3- 6 "	18
6-12 "	23

Martha Wollstein[8], 882 Autopsies

Age	Percent tuberculous
0- 3 months	1.8
3- 6 "	11.
6- 9 "	16.
9-12 "	23.

Pirquet[9] obtained the following results from tests upon 1,407 children seen at the Escherich Clinic, Vienna:

Years	0-1	1-2	2-3	3-4	5-6
No. of all cases	410	116	98	110	91
Reaction positive	21(5%)	24(4%)	32(33%)	42(38%)	50(55%)
Manifestly tuberculous reacting	21	23	19	23	18
Manifestly tuberculous not reacting (miliary tuberculosis)	1(5%)	4(20%)	1(19%)	3(21%)	1(20%)

Positive reaction in 80% of the cases was reached in the tenth year. Von Pirquet remarks that the percentage of reacting children is particularly high in his tables because "tuberculosis is notoriously prevalent in Vienna," especially among the poorer classes. When we compare the results of others with those given above we find that von Pirquet's figures are not so extraordinary after all.

Sachs employed the test on 217 of 322 children examined for tuberculosis from 146 tuberculous families and found reactions as noted in the table below. Petruschky's figures are so instructive that they are given side by side with those of Sachs.

Sachs[10]			Petruschky[11]		
Age	No. tested	Positive	Age	No. tested	Positive
Under 1 year	8	2 (25%)	Under 1 year	12	0
1 to 6 years	58	25 (43%)	1 to 6 years	22	11 (50%)
7 to 14 "	108	53 (49%)	7 to 14 "	148	111 (75%)
15 to 20 "	28	17 (60%)	15 to 20 "	69	60 (86%)

It is readily determined from these, and other statistics that the extent of tuberculous infection among children under three years of age is wider than we had formerly supposed.

Largely under three years		No. tuberculous	Percent tuberculous
Raczynski[12]	1452 autopsies	197	13
Holt[13]	319 "	44	14
Foundling Nursery, N. Y., Childs[14]	1448 "	158	11

Children all ages, largely under 15 yrs.[15]	Percent tuberculous
J. Comby (Paris Hospitals)	38.5%
Müller (Munich)	43%
Hamburger and Sluka	41%

The mortality in this class of cases is also considerable; much greater than appears on the face of our mortality statistics. Under such misleading titles as "marasmus," "wasting," anemia," "gastro-enteritis" and "convulsions" the cause of death is falsified in our death reports. In reality some form of tuberculosis, recognized or unrecognized, was the true pathologic basis of dissolution in many of these cases. This may be seen from the autopsy reports. It must be remembered, however, that a baby may die of some acute infection other than tuberculosis and still show tuberculous lesions at autopsy. The chief characteristics of tuberculosis in babyhood should always be kept in mind, namely its malignancy and tendency toward rapid dissemination.

We are now in a position to consider some of the more immediate practical matters relating to the subject. Whatever the mode of infection in babies may be, whether by the respiratory, gastro-intestinal, or skin route, it is very certain that the incidence of infection in the home environs should concern us most. It is of prime importance to thoroughly investigate the social soil of the home in treating babies. Several investigations have been carried out to determine the incidence of tuberculosis in children from tuberculous homes. Sachs[16], examined 322 infants from 146 families in which tuberculosis was known to be present in one or both of the parents. Of this number 171 children showed positive signs of tuberculosis. In 77 tuberculous families in which the total number of children, 264, were examined, 76 of them or 29% showed infection. Other observers have presented equally convincing figures. Floyd and Bowditch[17], made an extensive study of tuberculosis in children through family association from the poorest homes in Boston, and publish the following: Among 679 children from poor homes containing 500 living consumptives, and in 179 other homes where recent deaths had occurred from the disease, there were definite signs of pulmonary tuberculosis in 36%, and more than 66% of them all showed signs or symptoms of the disease. The results of our investigation given in tabulated form bring out many similar facts. These figures plainly show that the home environment is a tuberculous *milieu* in which a large number of children under three years receive infection.

The sources of infection in babies should also receive some consideration at this time. My conclusions regarding infection may be briefly summarized:

1. The possibility of a true inheritance of tuberculosis is so remote as to be removed from a practical discussion of the problem.

2. Congenital tuberculosis by placental transmission, while quite rare, has nevertheless been proved beyond a doubt. At present the number of undoubted cases is about 20. It is felt that as more placentae are carefully studied, more and more of these cases will be brought to light.

3. In the vast majority of instances the infection takes place after birth in the home environment through inhalation,

ingestion, and rarely inoculation. To my thinking the respiratory route is the most popular one for tubercle bacilli. While we must admit that bacilli may gain access to the milk from infected cows, and further that the bovine type may infect the human being, it is still felt to be secondary to contact infection arising in the home. The proved cases of infection from mother's milk are few indeed. Whether through inhalation, ingestion or inoculation, our duty as to prophylaxis and treatment becomes the matter of importance.

Before giving statistics gathered from tuberculous families represented in the case histories of the Babies' Dispensary and Hospital of Cleveland, a few words as to methods of obtaining data would not be out of order. Every case admitted to the Dispensary receives a thorough physical examination. If tuberculosis is suspected a von Pirquet test is employed. The family history is carefully sought, and the question of "lung trouble", or tuberculosis invariably raised. If any tuberculosis appears in the home environment a cutaneous tuberculin test is done on the child. When the nurses from the Dispensary visit the homes to investigate social conditions, they are on the alert for symptoms of tuberculosis in other members of the family, and so record it on the charts. If older children or adults exhibit suspicious signs of the disease they are referred to the Tuberculosis Dispensary for a thorough examination. A certain number of more hopeless tuberculous families receive expert attention from the Special Case Committee of the Tuberculosis Dispensary. In this way an admirable cooperation of interests has developed.

It is, therefore, felt that the tables presented here will largely speak for themselves. A detailed description of individual cases is certainly out of place.

TABLE II.

CLASSIFICATION OF THE TUBERCULOUS BABIES.

	Cases	Deaths
Pulmonary tuberculosis	90	21
Tuberculous adenitis	7	0
"Scrofulous" babies	14	0
Tuberculous meningitis	20	18
Tuberculous bronchial glands (evident)	7	0
Tuberculous vertebrae, Pott's disease	1	0
Tuberculous bones	5	0
Tuberculosis, no definite lesion	12	5
Total clinically tuberculous	163	50

NOTE: In this clinical classification it should be remembered that the cases are listed only under the headings of the most evident tuberculous lesions. A number undoubtedly had lesions in other parts. It is very likely that those dying with "no definite lesion" had a diffuse miliary tuberculosis. The negative von Pirquet reaction in these cases must be interpreted correctly; for it is well known that in advanced cases, in disseminated miliary tuberculosis, and tuberculous meningitis the reaction is practically always negative.

We now come to the more pertinent question; What shall we do with the baby in a tuberculous home? In considering treatment I shall not dwell much upon the medical side with which all of you are so familiar, but with social problems which perplex us sorely at times. Treatment may be carried out in:

1. The baby's own home under direction of physician and nurses.
2. A selected boarding home under competent medical supervision.
3. An outdoor ward.
4. A fresh air camp or tent colony.
5. A convalescent hospital.
6. A country home.
7. A special ward of a babies' hospital.
8. A contagious or tuberculosis ward of a general hospital.
9. The tuberculosis ward of a city hospital.

So far as treatment of the individual case in the early months of life is concerned, there is little to be said. The marked malignancy and tendency of tuberculosis to disseminate in babies practically dooms all those born with the disease, or acquiring it postpartum during the first six months. What concerns us most should be how to conserve the resources of the newborn and prevent them from becoming infected in a tuberculous home. If predisposed through tuberculous antecedents, or by an attack of whooping-cough, influenza or measles, we must do everything in our power to strengthen the resistance of the baby. When the baby is already infected, our duty is then to prevent it from becoming a menace to other members of the household. What to suggest for other members of the home is often a problem for the physician. In all cases the welfare of the mother, as well as the child, should be considered. For social treatment the cases may be divided thus:

1. When both mother and baby are free from tuberculous infection, but other members of the family show it: In this case the ideal treatment would be to have mother and babe removed to a healthful environment where the baby could be nursed properly, and the mother, freed from care, receive the necessary

rest, fresh air and nourishment. During the summer months fresh air camps, country homes, tent colonies, seaside cottages etc., would admirably meet the need in some localities, but in the winter it would be much more difficult to solve the problem. On the other hand, economic conditions in the home often preclude the possibility of the mother leaving with the baby. In this case all other members of the household should be referred to a tuberculosis dispensary, where instructions and help of the right sort can be given. The baby and its mother should be kept under careful supervision of a babies' dispensary, as breast feeding will be the greatest factor in strengthening the child's resources. By no means should a healthy baby be removed from the breast of a healthy mother, and thus robbed of its greatest means of protection.

TABLE III.

Tuberculous Babies' Feeding.

Feeding	Cured	Impvd.	Not impvd.	Died	Feeding indefinite
Breast fed	10*	41	8	25	..
Bottle fed	0	1	4	10	..
Mixed feeding	2	9	10	15	..
Totals	12	51	22	50	28

*Largely babies with tuberculous adenitis, or "scrofulous."

Infection of the premises is often important in these cases. When this is so, the individuals infected with tuberculosis should be removed to a suitable place for treatment, other members of the family moved to uninfected premises, and the mother and baby given every chance to get fresh air and good wholesome food, the baby being kept on the breast at least nine months. If moving is out of the question, then the house should be thoroughly cleaned and fumigated, and if possible the offending members taken to a sanatorium for tuberculosis. If all these means fail we must attempt to treat the tuberculous member in the most approved manner at home in a separate room, porch or sleeping tent. Regular visits from visiting nurses who give instructions and kindly advice will do much to regulate home treatment.

2. If the baby proves tuberculous and its mother is not: The duty of the physician in this case is very clear. Briefly, to keep the baby on regular, not too frequent, breast feedings. Encourage the mother in every way to nurse her child. The danger of infection to the mother is not great if she is properly instructed, or to other members of the family if precautions are

taken. Here is a class of babies needing fresh air homes, country homes, convalescent hospitals, or specially equipped sanatoria where mother and child could be kept together. By no means should such a child be placed in a day nursery or kindergarten. Not only on account of possible chances of infection to other children, but mainly because such children need special care and treatment.

TABLE IV.

TUBERCULOUS BABIES.

	Age in Months	No. of babies on admission	No. of babies discharged	Cured	Imp'v'd	Not imp'v d	Died
1	13	1	..	1	..	..	
2	5	1	..	..	..	1	
3	1	2	..	1	..	1	
4	8	3	..	1	..	2	
5	7	7	..	..	3	4	
6	8	2	..	..	2	..	
7	2	3	..	..	..	3	
8	7	4	..	2	..	2	
9	8	2	..	..	..	2	Could not trace definitely
10	5	7	..	2	1	4	
11	6	8	..	1	3	4	
12	5	6	..	1	1	4	
13	3	4	..	1	2	1	
14	5	7	..	3	..	4	
15	11	7	1	4	1	1	
17	4	6	..	1	2	3	
18	6	11	3	3	2	3	
20	7	7	1	3	1	2	
21	3	6	..	4	2	..	
23	5	6	..	1	3	2	
24	11	5	1	2	1	1	
26	1	8	2	2	2	2	
28	4	5	..	2	2	1	
30	1	7	2	2	2	1	
33	0	5	1	3	..	1	
36	1	7	1	4	1	1	
Totals	137	137	12	44	31	50	26

3. What shall we do for a normal, healthy baby of a tuberculous mother? This is a most difficult situation to handle properly. It should be considered under two aspects, (1) when the mother is in the incipient, or latent stage, and (2) when she is in the open or advanced stage.

In attempting to answer the first I must confess that I cannot subscribe to the dictum of a number of men who say unreservedly that the healthy baby of a tuberculous mother should be removed immediately from the breast and placed on a suitable cow's milk modification. If a good wet nurse is available, they would commit the baby to her care. A careful study of the class of patients with whom we have to deal in the Dispensary has forced me to different conclusions. A considerable number of mothers with latent or incipient tuberculosis come to parturition with remarkable vigor. It seems, in not a few cases, that nature fortifies them for the strain of labor. Equally true is it that the old tuberculous process lights up after the trying ordeal of labor and a prolonged lactation period in more cases than we would like to see. But, should we invariably take the baby from the breast because this possibility exists? I believe not. If the mother is in the incipient stage, is not losing weight, has a good appetite, and appears to be able to hold her ground, I have found it advisable to encourage breast feeding, at least throughout the perilous first few months. Both mother and babe should be under constant surveillance. Everything should be done to build up the resistance of the mother. The nursing periods should not be too frequent—every four hours during the day and perhaps once at night.

The danger of infecting the baby in this case is very slight, there being extremely few instances in which tubercle bacilli have been positively demonstrated in the mother's milk. In our series of cases the mortality of nursing mothers with incipient or latent tuberculosis was very low (Table 1). Comparatively few of the nursing babies of such mothers acquired tuberculosis while under our care. When infection did take place we could usually trace it to some open case of tuberculosis in the home environment. Of course, if the mother showed signs of weakening under the strain of nursing, we should always consider the advisability of removal of the baby from the breast.

If the mother is an open or advanced case, we must resort to different tactics at once. Here it is wise to remove immediately the child from all possible chances of direct infection. A good wet-nurse should first be sought. When this is impossible to carry out at home, the baby should be removed to a suitable boarding home under competent supervision, and a correct feeding regime instituted. Only one or two babies should ever be kept in each boarding home. During the summer months such children might with profit be taken care of in a country home, or summer camp. The mother should always be referred to a tuberculosis dispensary for proper treatment. Other members in the home should be protected from infection.

4. When both parents are actively, or even latently tuberculous, and the baby is not: In this case it is usually best to remove the child to a more healthful environment, provide a suitable wet-nurse if possible—if not, to secure clean, pure milk, properly modified. The parents should be encouraged to go to a sanatorium for treatment. The other children might be placed in country homes. Where the home environment is infected with tuberculosis in the congested districts of our large cities, the State should delegate power to the municipality to deal in the most approved way with the family. If necessary, the family should be broken up to protect other members of the community.

In discussing the social treatment of babies I have necessarily had to confine myself within narrow limits. It is quite evident, however, that this problem is intimately related to many others affecting our social life. When we come to fully realize that the baby is the center of family life; that the family is the unit of society, we shall see that the stability of our modern society depends largely upon the conservation of child life.

8300 Cedar Ave.

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Clinical Evidence of the Relation of Menstruation, Ovulation and Fertilization.

By ARTHUR H. BILL, M. D., Cleveland.

This paper, presented in conjunction with the papers of Dr Waite and Dr Ingalls on the same subject, while giving little that is new, is to serve chiefly as a review of that which is already known of the subject clinically, and of the conclusions which have been drawn from clinical observations and experiments concerning the date of conception in relation to that of menstruation and ovulation.

That the menstrual changes depend upon the presence of functionating ovaries is of course shown by the fact that women cease to menstruate after the removal of the ovaries, and by the fact that women with congenital defects of the ovaries do not menstruate. Cases are seen in which menstruation occurs after the supposed removal of the ovaries at operation, but in these cases undoubtedly some portion of ovarian tissue has been left behind. On the other hand, that ovulation does not depend upon the presence of menstruation is definitely shown by the fact that ovulation, that is, the rupture of a Graafian follicle, as shown by the presence of a corpus luteum hemorrhagicum, has been observed after the removal of the uterus. It is also shown by the fact that women who do not menstruate may become pregnant, for example cases of pregnancy occurring in young girls before the appearance of the first menstrual period, as has been reported in certain tribes which considered it a crime for parents to allow their daughters to reach the age of the appearance of the menses before marrying. Again this is seen in the pregnancies occurring during the amenorrhea of the child-bearing period.

Chrobak observed a married woman who did not menstruate until after her fourth pregnancy.

Ahlfeld delivered a woman at the age of 32 who had never menstruated, and reported an extra-uterine pregnancy in a girl

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of 13 who had never menstruated. We frequently observe women who conceive during the amenorrhea of lactation. Remfry placed the probability of nursing women who did not menstruate becoming pregnant at 6 in 100, of those who did menstruate at 6 in 10. Of 900 nursing women 43% menstruated and 57% did not menstruate.

Bischoff in 1844 propounded the theory of the periodical ripening of the follicles independently of intercourse or conception. He also showed that in menstruating women there was a freshly ruptured follicle in the ovary, and reported three abdominal sections on menstruating women in whom he observed ruptured follicles. This fact has been observed by a great many operators. A few of the recorded cases illustrate clearly the close relationship of menstruation to ovulation.

Girdwood reported a case of an 18 year old girl, who had menstruated six times, in whom he observed five distinct scars and one doubtful scar on the ovaries; also another patient, who had menstruated 36 times, in whose ovaries he counted 35 scars. In still another who had had 24 menstrual periods, 22 scars were observed.

Reichert reported 23 cases, in four of which ripe unruptured follicles were present, in 18 cases ruptured follicles with menstruation and in one case a ruptured follicle without menstruation. Williams observed 16 cases; 12 with ruptured follicles before menstruation, three cases of menstruation without ovulation, and one doubtful case. Of 42 cases reported by Leopold and Mironoff, there was ovulation and menstruation together in 30 and menstruation without ovulation in 12 cases. Arnold collected from various other reports 54 cases, in 39 of which ovulation and menstruation coincided.

Thus in the great majority of cases of menstruating women a corpus luteum hemorrhagicum was found, but we must also say that first, ovulation may occur without menstruation, and secondly, menstruation may occur without the rupture of a follicle. The latter is really, in all probability, an abnormality according to Strassman, that is the separation of the ovum from the ovary is hindered by some structural changes, such as a deeply seated ovum, old inflammatory conditions, adhesions and the like. In the majority of cases ovulation had occurred shortly before the onset of menstruation, as shown by the finding of a corpus luteum hemorrhagicum in the ovary at the menstrual period and before the appearance of the menses. Thus there is a definite period between the time of ovulation and that of menstruation of one to several days, which Strassman designates the "latent period." This is analogous to the latent period seen in cases of pseudomenstruation after the removal of the ovaries at operation, or after experimentally increasing the pressure in the ovaries. It is also noteworthy that such a latent period occurs when lactation begins first on about the third day after labor, or when labor sets in several days at least after the death of a fetus.

Veit cites the so-called pseudomenstruation which sometimes follows the removal of both ovaries, or of the one ovary which contains the ripe follicle, as evidence for the supposition that the expulsion of a ripe ovum is regularly followed by menstruation. In these cases the flow occurs, as in menstruation, two or three days after the removal of the follicle. It is also of note that not infrequently during menstruation engorgement of the breasts occurs and even secretion, that is spurious lactation, changes usually occurring after the expulsion of a mature fetus, but sometimes after an abortion and in this case after the expulsion of a non-fertilized ovum. Just how the uterine changes are influenced by the ovaries is in dispute. Pflüger considered the nervous system as an important agent, namely that the growth of the follicle causes a mechanical irritation of the nerves which are in the stroma of the ovary and surround the follicle with a dense network. When this irritation reaches a certain degree the stimulus, carried to a governing center, is referred to the uterus and other internal organs of generation, causing on the one hand the uterine changes, and on the other the complete ripening and bursting of the follicle.

Strassman's observations added to Pflüger's theory. He increased the pressure in the stroma of the ovaries of animals by injecting such things as salt solution, glycerin and gelatin, and was able to produce a swelling and hyperemia of the uterine mucosa thereby. The discovery of a sympathetic ganglion in the ovary also seems to strengthen this theory. The chemical stimulation theory, that is that the stimulus is due to the internal secretion of the ovaries, also has some evidence in its favor, chiefly the experiments of Halban who observed that in monkeys menstruation went on without interruption if the ovaries were removed and transplanted in a suitable part of the body, and that after subsequent removal of the transplanted ovaries menstruation immediately ceased.

Born and L. Fraenkel consider that not the whole ovary or follicle but only the corpus luteum furnishes the internal secretion which causes the periodical changes of menstruation. As evidence of this Fraenkel observed that one menstrual period was missed after cauterizing a corpus luteum at operation.

The changes occurring in the uterus during the menstrual epoch are so significant as to apparently furnish considerable evidence as to the relation between menstruation and ovulation, and it is well to mention what these changes are. The most important changes are those occurring before menstruation. The premenstrual swelling of the mucosa, by which it gradually increases from a thickness of two or three mm. to one of six or seven mm. begins about 10 days before the menstrual flow. There is an increased vascularity; the glands increase in length and become tortuous; the epithelial cells are larger; the connective tissue shows an increase in the round cells; and, although there is not a definite change of interstitial cells to decidua cells, still single cells have a greater diameter and closely resemble true decidua cells, the change to typical decidua cells being apparently but a step further, one which occurs when an ovum is fertilized. The rest of the menstrual cycle, consisting of the flow and the subsequent retrograde changes, which continue for about 16 days, according to Westphal, serve to undo what changes have occurred previous to the menses and restore the mucosa to its normal condition. This periodical swelling of the endometrium may thus be designated as a function of the ripening of an ovum, while a true decidua formation may be designated as a function of the fertilization of an ovum. When fertilization takes place the period of decidua formation follows as a direct continuation of that of the antemenstrual changes, which may be called the antedecidual stage, a stage which furnishes most favorable conditions for the imbedding of an ovum.

From a clinical standpoint the most important phase of this subject is the time when the fertilization of the ovum takes place in relation to the menstrual period. If we consider that the follicle ruptures at about the time of menstruation there are several possibilities as to the time and place of fertilization. To illustrate this Bumm cites a hypothetical case of a woman in whom menstruation and ovulation occurred at the same time every 28 days. The menstrual period began January 1 and lasted three days. On January 28, when the next period should have occurred, there was no menstruation as she had become pregnant. There was only one intercourse, January 8, that is eight days after the beginning of the last period. What did the union of the spermatozoon and ovum take place? The first possibility is that at the beginning of the last menstrual period, January 1, a follicle ruptured, the ovum during the next days slowly passed through the tube and was fertilized eight or nine days after leaving the ovary, and consequently in the uterus or uterine end of the tube. As to the time consumed in the passage of the ovum through the tube some evidence is given by the observation of Hyrtl who found an ovum in the uterine end of the tube in the case of a girl dying on the fourth day of menstruation. Applying this to our present case it would be necessary for the ovum to remain in the uterus about four days before being fertilized and then find itself lying on a mucosa in which retrograde changes were taking place, an unfavorable condition for imbedding. The second possibility is that the ovum set free at the last period was discharged or destroyed. The spermatozoa remained in the tubes until the next ovum was set free, that is, just before the time of the first period which was missed. That spermatozoa may remain active in the tubes during the entire period between two menstrual periods seems certain. Piersol observed active spermatozoa in the tube eight days after coitus, and Dührssen found them 21 days after coitus. The first possibility was the one formerly generally accepted. In 1870 Reichert, Sigismund and Löwenhardt took up the latter. Apparently in favor of the first is the fact that the fruitful coitus in the majority of cases is during the first 10 days after the last menstruation. According to Hensen's collection of such cases this occurred in 86%. But this does not necessarily show that the ovum is at this time most accessible and most easily fertilized, but may simply show that during this time the condition of the uterine mucosa is most favorable for the passage of spermatozoa, having become lower and less congested. Later more resistance to their passage is offered on account of the retraction of the cervix. There are also some clinical facts which make it probable that the fertilized ovum belongs to the first absent period. For instance, there is no evidence as yet of an abortion occurring before the first suppression of the menses. Again the first subjective symptoms of pregnancy, such as nausea and morning vomiting, almost without exception, appear after one period has been absent. That these subjective symptoms may begin soon after the implantation of the ovum is shown by a case reported by Bab in which the date of fertilization was estimated by a study of the embryo expelled. In this case morning nausea and vomiting began during the first week after fertilization of the ovum. An estimate of the time when the ovum was fertilized from the size of certain embryos shows, of 16 cases, 12 belonged to the time of the first period missed, while four belonged to the time of the last menstruation, and there are reasons for thinking that this last was an irregular period such as not infrequently occurs during the early months of pregnancy.

If we consider that the ovum is fertilized shortly after a period, we must assume that there is a second change in the mucosa of the uterus preparatory to the imbedding, for this is the period of the retrograde changes in the mucosa. But if the imbedding comes before the expected period the development of the decidua follows immediately after the premenstrual changes in the mucosa. Löwenhardt determined from the records of Hecker, Veit, and Ahlfeld that the duration of pregnancy is not influenced by the time relation of conception to the last period, and concluded that the ovum of the expected period is fertilized.

Bischoff reported cases in which conception took place 22 days after the beginning and 18 days after the end of the menstrual period. Wagner reported cases of pregnancy occurring two days before a period, and 16 days after the end of a period, also four cases of conception on the thirteenth, sixteenth, eighteenth and twenty-fourth day after the period. Bab reported cases of conception occurring 18 days and 21 days after the last menstruation, and 15 days after the last coitus.

From these facts we may of course conclude that conception may follow a single intercourse occurring at any time between menstrual periods, but we cannot conclude that the fertilization of the ovum may take place at any time. In all probability the rupture of the follicle occurs at approximately the same time relative to the menstruation in most cases, the spermatozoa remaining in the tubes a longer or shorter time in the various cases before fertilizing the ovum, depending upon the time of coitus. The ovum which is fertilized is apparently in most cases that belonging to the first missed period. Thus to attempt, as is sometimes done, to determine the probable duration of pregnancy from the time of a single coitus is by no means accurate and the most important date from a clinical standpoint in making the estimation remains the last menstrual period.

Granting that the ovum is expelled from the ovary several days (about three) before the onset of menstruation, as is born out by clinical findings in the majority of cases, the probable date of conception may be computed by adding to the time of the last menstrual period the interval normally occurring between the periods in the case at hand and subtracting the three days. This could of course be done only in cases in which the previous type of menstruation had been regular. Such a calculation of the date of conception would, however, not necessarily determine the date of confinement, since the total duration of gestation is apparently a variable factor.

310 Osborn Bldg.

Relation Between Ovulation, Menstruation and Fertilization as Shown by Some Early Human Embryos.

By N. W. INGALLS, M. D., Cleveland.

In discussing the relation between ovulation, menstruation and fertilization, certain of the statements which I shall make will find elucidation or qualification in the succeeding paper.

To begin with the simplest question, we may say that there is a fairly close relation between ovulation and fertilization. Ovulation must obviously precede fertilization and the question is, how long after rupture of the Graafian follicle is the ovum capable of being fertilized. According to the view commonly held by embryologists, if not by gynecologists, it is only for a short time after ovulation that conditions are most favorable, and this combined with the probable length of time consumed by the ovum in traversing the tube would suggest the outer part of the tube as the probable point of meeting of ovum and spermatozoon. This would be, in part, on the supposition made for simplicity, that there are always present in the tubes spermatozoa, active and therefore, although not necessarily, capable of fertilizing the ovum. Here the rapidity of movement and length of life of the spermatozoa would have to be considered, particularly when there enters into the calculation of the age of the embryo, the definite history of a single intercourse, as is occasionally the case. The comparatively great infrequency of conception, however, in spite of continual ovulation and the hypothetically con-

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stant presence of active spermatozoa in the tubes would probably indicate some close relation in time between ovulation and insemination as necessary for conception.

The question of the relation between fertilization and menstruation disappears if we admit, as seems easily true, that spermatozoa may remain in an active and efficient state in the tubes during the time consumed by the menstrual discharge.

The remaining question would be that of the relation between ovulation and menstruation. It has long been known that ovulation may occur at any time during the menstrual cycle and that it may fail to take place in any close relation with the time of discharge, although that the two are associated more or less closely in time but not in cause seems probable. The proof of this is abundant, as in cases of conception either before the appearance of menstruation or long after its cessation, and further, in cases in which there has never been any menstruation at all or during the amenorrhea of pregnancy. Consequently, we may say that fertilization, i. e., the moment from which we must compute the age of the embryo may fall at any time during the menstrual cycle, and that the determination of age by reference either to the past period or the first missed period is by no means accurate in all cases.

Teacher and Bryce have recently described a very young ovum, although not perfectly normal, the age of which they estimate at 13-14 days. This is based upon the fact that the only intercourse concerned took place 17 days before the abortion. From this they deduct the time necessary for the spermatozoa to reach the outer end of the tubes and also the number of days between the beginning of the bleeding and the expulsion of the ovum. Computed by the rule of His the age would have been 10 days. These same authors have further collected from the literature the data concerning a number of young embryos and, by comparison, largely with their own embryo, have given each an approximate age in days, which ages are quite at variance with the results derived from the application of the rule of His. In the following I shall refer to these embryos by letters, from a to h. On the supposition that the above ages are approximately correct, and the fact that there is little difference in their stage of development and therefore, considering their absolute age in days, about 14, probably very little difference in their ages, this fact I say would obviate any great error in the conclusions we may draw, and on the above supposition, we can, by counting back from the date of abortion, determine the time as regards the menstrual cycle in which fertilization and imbedding must have taken place. Taking 28 days for this cycle, fertilization would have occurred as follows: for embryo a on the sixth, b on the seventh, c on the fourteenth, d on the sixteenth, e on the seventeenth, f on the nineteenth, g on the twenty-third, and h on the twenty-fourth day of the menstrual cycle.

Allowing, as Teacher and Bryce do, seven days between fertilization and imbedding, the same supposition would give the following dates as those of the imbedding of the ovum in the uterine mucosa: embryo a on the thirteenth, b on the fourteenth, c on the twenty-first, d on the twenty-third, e on the twenty-fourth, f on the twenty-sixth day of the same cycle and g on the second and h on the third day of the following cycle. Supposing, however, for the sake of argument, that the ages given for the above embryos are incorrect, it still remains that they are of approximately the same age, four of them varying within about two days. But in contrast with this slight probable variation in age, there are, for these four embryos differences of from 1 to 18 days in their relation to the menstrual cycle. Their ages cannot therefore be calculated accurately from any given menstruation.

His in his classical work published in 1885 assigns a definite age for practically all embryos considered. It is, on the other hand, significant that Keibel, in his Normantafeln des Menschen published last year, out of 84 embryos described, ventures a statement as to their age in only 15 cases and of these 15, 12 are noted as about or estimated as of, the age given, and only two are considered as fairly certain. He states explicitly that we do not possess any data whatsoever that would warrant an assertion regarding the age of a given embyro and that, for the present at least, such statements can have only the value of approximations.

The Relation of Menstruation, Ovulation and Pregnancy in Mammals.

By F. C. WAITE, Ph.D.

The physiology of menstruation in homo and its relation to ovulation and pregnancy is complicated by the fact that the mode

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of living, religious customs, etc., bring about a very considerable modification from the primitive condition. It may therefore be said that in homo the relation of these several functions is aberrant from the normal function in mammals.

Therefore, we may hope to get some light on the normal relations by studying the conditions in other mammals. The greater part of our knowledge on this subject rests upon observations on domesticated animals, or upon wild animals in captivity. Domestication or captivity certainly modifies the original conditions found in mammals living in the wild state; therefore, even in animals that have been studied, we have not the primary and natural condition. This can be found only in animals in their feral state.

The primary sexual organs, i. e., ovaries and testes, of all animals are subject to seasonal activities alternating with torpid, i. e., fallow periods. Familiar examples are the spawning season of fishes and amphibia (frogs, toads, etc.) These animals usually produce ova and spermatozoa at one season of the year only, and that season is very short. In most wild birds there is also a single seasonal period of maturation of germ cells, though in many, this is followed after a period of a few weeks by a second and even a third season. In a few forms, such as the exotic English sparrow, we find fertility through the greater part of the year. In mammals we find a similar seasonal periodicity, but with wide variation and many complicating factors. The discussion that follows will be confined to mammals.

A comparative study of both the physiological and morphological conditions of the sexual organs during active and fallow periods shows that the fallow periods are not due to degenerative changes, but to the absence of specific stimuli. This periodic accession of a specific stimulus culminates in two functions: first, the maturing of the germ cells (ova or spermatozoa) and second, in sexual desire resulting in coition, and thus affording opportunity for the sex cells, which have grown thus far parthenogenetically to continue their growth under the added stimulus of union with the cells of the complementary sex.

Whether there is a single stimulus which inaugurates these two functions, i. e., ripening of sex cells and sexual desire; or whether these arise from separate but coordinated stimuli is a question on which there is variance of opinion, depending largely on the interpretation given to various points of evidence. From a consideration of the condition in homo alone, it has been assumed that a single kind of stimulus gives rise to both, but the evidence of comparative physiology gives much reason to believe that these two functions arise from separate stimuli, usually coordinated but not necessarily simultaneous.

As to the nature of these stimuli (or the single stimulus) there is lack of definite knowledge. It is usually stated that the ovary is an organ with two functions, one to produce ova, the other to produce an internal secretion which incites the periodic activity of the accessory sexual organs, i. e., the phases of menstruation. The evidence for this statement is chiefly *a priori,* since very little experimental work has been done on it.

The periodicity of these special activities of the primary and secondary sexual organs is extremely variable in different species and is influenced by many factors of both internal and extraneous origin. In some mammals there is but one season a year, in others several: in some the sexual season is short, in others prolonged and in still others continuous. In the female, when reproduction takes place, the conditions of sexual periodicity vary from the normal. Usually the sexual seasons are interrupted during pregnancy, and often for a time after parturition, i. e., during the period of lactation while the mammary glands are most active, but if the activity of these glands is intermitted, the sexual periodicity will be resumed, giving evidence that the balance of nutrition is an important factor.

In the female of nearly all domesticated mammals, the sexual activity begins as a preparatory period marked by congestion of the genitalia, both internal and external, followed by active secretion from the walls of the uterus. This is sometimes, but by no means always, accompanied by epithelial sloughing of the uterine wall and extravasation from the blood vessels of the uterus. This entire process is known as the prooestrous. It is immediately followed by the culmination of sexual desire known as the oestrous. In nearly all domesticated mammals, it is at the oestrous only that the female will receive the male. The duration of the oestrous varies from a few hours (12 in ewe and 24 in cow) to several weeks. If conception does not occur, the oestrous is followed by a gradual subsidence of the activity of the genitalia, during which the uterine epithelium is repaired and sexual desire is at a minimum. This period of subsidence is known as the metoestrum. It is followed by the anoestrum or period of rest.

The parallel between prooestrum, oestrum, metoestrum and anoestrum, and the phenomena of menstruation in the human female is evident. This cycle of phenomena is apparently a fixed functional condition for all mammals (and also in simpler form for most other vertebrates), but the length of the anoestrum is variable for different species. It may last (in non-pregnancy) in the ordinary domestic animals from two to eleven months. In elephants it is probably about 20 months. During the anoestrum the ovaries are fallow. The simple condition is one cycle per year and animals with this long cycle are known as *monoestrous.*

Instead we may have an abnormally short anoestrum, an oestrum without fertilization being followed by a new cycle beginning in 12 or 14 days. Such animals are called *polyoestrous.* In them the cycle may be repeated two or three times and then a long (several months) anoestrum intervene. Such animals are *seasonally polyoestrous.* Again the cycles may follow one another continuously throughout the sexual life of the individual. Such animals are *continuously polyoestrous,* as homo. It is clear that the variation in the length of the anoestrum is the important factor of the cycle.

Observation shows that the length of the anoestrum may be modified by extraneous causes, e. g., the wolf is a monoestrous animal, but the dog, which is genetically closely related, is seasonally polyoestrous (three or four seasons a year). It has been noted that wolves in captivity may become polyoestrous; that wild dogs are monoestrous; that while dogs of temperate climates are seasonally polyoestrous, those of arctic climates are monoestrous; and that highly bred dogs are likely to be monoestrous.

Many other examples might be cited which show that plentiful food and moderate climate induces to polyoestrous condition, while limited food and rigorous climate induces to monoestrous condition; i. e., that nutrition and climate are two influential factors on the frequency of sexual periods. Nevertheless, there is some fixity of periodicity in various groups of animals; e. g., the continuous polyoestrous condition is a characteristic of all primates (monkeys, lemurs, homo).

As a general rule in mammals, when pregnancy intervenes, the anoestrum is extended until parturition: in some species it is further extended to the end of lactation but there is individual variation dependent apparently upon nutrition. Occasionally an abnormal oestrum may occur during pregnancy. This is usually independent of an ovulation.

There are also sexual seasons in males. This is known as "rut" (Rut should not be applied to female functions). In those species which are monoestrous, the oestrum of the female is coincident with "rut" of the male, e. g., red deer; but red deer, ordinarily monoestrous, become in captivity polyoestrous and the male has multiple rutting seasons. Likewise wapiti stag ruts all the year around when in captivity. In those monoestrous species in which the male is capable all the year round, it is found that the oestri of individual females come at different seasons.

It seems fair to infer from the foregoing that the polyoestrous condition is derived from the monoestrous and that either is capable of modification by factors of food, climate and captivity. Further, that the polyoestrous condition is less stable than the monoestrous. Even in homo where it is the characteristic of the great primate group, it may be modified, e. g., 90% of the Esquimaux females do not menstruate in winter. In areas of famine, menstruation is much delayed or even absent during part of the year. Individual anomalies in women of only two or three menstruations during a year are known.

There is considerable evidence in anthropological lines to show that in some savage races there is a seasonal periodicity. Nearly all savage races have phallic feasts, which are times of sexual license. These usually are in the spring and fall and correspond to semiannual oestri. Moreover, statistics of births show among Caucasians two maxima of births indicating two periods of greater fertility corresponding to spring and fall. We may therefore *guardedly* state that while homo has reached by derivation a complete continuous polyoestrous condition, i. e., recurrent periodicity of 28 days, subject to climatic variation as to menstruation, there is still a seasonal periodicity as to fertility and that not every menstruation is coordinated with an ovulation and that the seasons when coordination is closest are spring and fall.

Ovulation is not necessarily coincident with oestrus. Both are due to stimuli, but probably not to the same stimulus. In monkeys,—which are polyoestrous—there is good evidence from the histological study of ovaries that ovulation is seasonal. Ovulation is periodic, so also is oestrous, but (in monkeys at least) the length of periods is not the same, i. e., the rhythms are different. In bats, which are monoestrous, the oestrum occurs in the fall and coition takes place at this time. At the time of oestrous histological examination shows that the ovaries are fallow and in fact ova do not ripen nor ovulation occur until several months after menstruation, the spermatozoa being carried in the accessory female genitalia during the period intervening between oestrous and ovulation.

The evidence of comparative physiology therefore is that oestrous (menstruation) and ovulation are two independent processes arising from independent stimuli, and having independent rhythms of periodicity. These rhythms may be closely associated and coordinated, or may be divergent, and individual variations in each may cause a divergence from the normal.

What application of these considerations can be made to the relation of ovulation and menstruation in homo? Granted that normally the rhythms of the two processes are synchronous, it is certainly conceivable that, since the stimuli are probably separate, the rhythm of one process may become aberrant from the normal, or both become aberrant but one with a greater divergence than the other. In either case, the two rhythms are no longer synchronous, and therefore only at long intervals will the two rhythms intersect, so that both processes occur together. The highly modified type of placentation in homo demands that there be but a short interval during which a fertile ovum may become imbedded, hence a coincidence or close correlation of the two processes is necessary to secure conception.

In other mammals we know that the rhythm of oestrous can be influenced by conditions of nutrition, climate, health, etc. In homo in addition to these we have the extremely influential factors of the upright position and clothing, as well as the factors of irregularity of habits of life, hence it would appear that a divergence from the normal rhythm is more likely in homo than in lower mammals. Therefore there seems to be at least some reason to believe that even if both ovaries and uterus are in healthy condition, yet not every menstruation is capable of being followed by conception.

In 1882, His laid down certain principles in regard to age of embryos which have usually been accepted by embryologists. These were:

1. Development begins at the moment when the male cell enters the ovum and fertilizes it.

The entrance into the ovum (impregnation) and the fertilization (fusion of the two pronuclei) are two very different processes. Impregnation may occur without fertilization in some forms, especially in cases of polyspermy where several sperm enter the ovum. Segmentation begins shortly after the fusion of the pronuclei (i. e., fertilization), but we have no accurate data for any mammals as to the length of time segmentation occupies.

2. The time at which the ovum leaves the ovary is determined by the menstrual period, but the rupture of the follicle is not necessarily coincident with the beginning of hemorrhage, but may occur two or three days before the hemorrhage or even during the hemorrhage.

This principle rests largely on *a priori* evidence and is based upon the assumption that ovulation and menstruation are interdependent processes. We have seen this is not always true and the bursting of the follicle, while usually coordinated, is not necessarily so.

3. The ovum is not capable of being fertilized at any other point than in the upper part of the oviduct.

We know that this statement is erroneous in at least two particulars; namely, that ova may be fertilized without leaving the follicle (ovarian pregnancy), or without presumably ever having been in the oviduct (body-cavity pregnancy). It is, however, possible that the ova of body cavity or peritoneal pregnancies may have entered the oviduct and then escaped. Of course it is well known that spermatozoa may reach the body cavity. There seems no physiological reason why ova must be fertilized in the distal part of the oviduct. In amphibia, reptiles and birds, where secondary membranes of albumen and shell are laid on the ovum by glands in the proximal part of the oviduct, it, of course, is impossible for the spermatozoa to reach the ovum after these secondary membranes are laid down, but in mammals there are no such membranes. A maturated egg in all lower animals is capable of fertilization for a considerable time. The assumption that the distal oviduct is the region of fertilization is based upon the facts, first that spermatozoa are found here, and second, that imbedding sometimes occurs in the proximal oviduct. It is undoubtedly true that impregnation does occur often, perhaps usually in the distal oviduct, but I can see no valid reason why a coitus after ovulation, and while the ovum is traversing the oviduct, should not result in fertilization in the proximal oviduct or even in the uterus. It is quite a different question whether such an ovum would become imbedded.

4. The spermatozoa having entered the female genitalia must await the ovum in the upper oviduct and can retain their vitality for several days or weeks; therefore the time of cohabitation does not stand in direct relation to the age of the embryo.

I have already discussed the question of the limited area where fertilization may occur. The matter of the vitality of spermatozoa is one into which a very fundamental error in the argument has entered. Vitality of the spermatozoa has been measured by their power of motility. This is very different from the capability of fertilization. The motor function and germ function of these cells are as much different as the power of locomotion and digestion in an animal. It has been shown in invertebrates that sperm cells which have been long extruded may be still freely motile and yet entirely incapable of fertilizing an ovum. It is proble that the duration of fertilizing power in both ova and spermatozoa is comparatively short. Certainly we should expect the male cell with its great activity and hence extensive metabolism, far from food supply, sooner to exhaust its functional capability than would the ovum. Such has been found to be the case in the sex cells of some invertebrates.

5. In the majority of cases the age of the embryo can be estimated from the beginning of the first menstrual period which has lapsed. It is possible, however, for menstruation to occur after fertilization of the ovum.

Here is the crux of the whole matteer. The evidence of the embryo which N. W. Ingalls has described appears to bear this out, but it is on the assumption that ovulation and menstruation are always synchronous and further on the basis of very arbitrary calculation as to rate of movement of spermatozoa and fertilized ova. Of this rate we must admit that our evidence is fragmentary and faulty.

I do not wish to appear an iconoclast, but it seems to me that we are approaching a time when our ideas on these questions must be revised. There is much evidence of a comparative sort which can be properly equated and brought to bear on this question, and it is possible to do a certain amount of experimental work on mammals along the lines which have given so much light in invertebrate embryology.

On the clinical side we need a systematic statistical research based on carefully collected data. It is very difficult to secure this, but until we get it, the very important matter of predicting the time of parturition, will remain a matter of guesswork rather than one of fairly accurate approximation.

The Profession of Nursing.

By CHARLES L. SCUDDER, M. D.,

Surgeon to the Massachusetts General Hospital; Lecturer on Surgery, Harvard Medical School, Boston, Mass.

Of the value of an address upon an occasion of this kind I am not altogether certain. However, love for my own profession and great interest in yours led me to accept the very kind

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Address before the Graduating Class of the Training School for Nurses, Lakeside Hospital, Cleveland, Ohio, May 27, 1910.

invitation to speak to you this afternoon. I believe that the older and more established profession should be of assistance, if possible, to the younger.

Search the scriptures of human achievement and you will be unable to find any equal in beneficence (1) to the introduction of anesthesia in 1846, coupled forever with the name of Morton; (2) the practical application of asepsis in 1870, with which the names of Pasteur and Lister will ever be bound; (3) the opening page of bacteriology in 1882, when Robert Koch announced the discovery of the bacillus of tuberculosis; and (4) specialism in medicine, including the development of research laboratories. These are the four factors which have contributed to the present marvelous development of medicine, especially preventive medicine, and the art of surgery. During the same period, about 60 years ago, the training of women to be nurses began at the school of Miss Nightingale at Kaiserwerth.

Nursing as a practice originated in the dim past. Nursing as an art to be cultivated is recent. The very great development of medicine and surgery necessitated an improvement in the work of nurses. Medicine is intimately related with nursing. The physician and surgeon are dependent upon the trained nurse in their efforts to relieve the helpless and ill. Without the trained nurse the physician and surgeon would be sorely handicapped. The very intimate relation of the nurse to the community necessitates special fitness. Consequently during recent years the education of women to be nurses has been a very vital subject and has become one of great importance.

Today the ideal educational methods are being reached after and approximated to, i. e., there is being widely discussed the establishment of preparatory and nursing schools, entirely independent of hospitals, where women may go and receive the preliminary and non-hospital education, introductory to training school work. This step has recently been taken by the Regents of the University of Minnesota. Here the pupils are given the standing of university students. It is supposed that if reasons or principles are taught in the preparatory school the practice of the art of nursing will be more intelligently and satisfactorily carried out in the hospital. Such a school should present principles based on facts in science and should inculcate good methods of work. That this is the coming and ideal method of education for nurses is demonstrated by the success of the well-established

Waltham School of Nursing in Massachusetts; by the alliances of schools for nurses with preparatory courses at Simmons College in Boston, at Drexel Institute in Philadelphia, at the Toronto Technical School and at the Kansas State Agricultural College, and at the University of Minnesota. Not only will the ideal nurses' school offer proper preparatory coures but attractive postgraduate courses as well.

At present there are more than 26,000 nurses in the United States. In the small state of Massachusetts alone there are about 4,000. In the United States there are 1,026 schools for nurses, almost all of which are intimately connected with hospitals. These schools have an average course of two years and eight months.

These many nurses have their school alumnae associations. In 1897 the Nurses Associated Alumnae of the United States organized. The object of this Association is the general uplifting of the nurse and her work; proper protection by law, and recognition by the public.

Each one of these many training schools has its Superintendent. In 1893 the American Society of Superintendents was formed. The primary object of this Society is the educational advancement of nursing; the development of a fixed standard of education common to all schools and to all nurses. These two great Associations united in 1905, in the American Federation of Nurses, and that same year joined the International Council of Nurses. The American Federation of Nurses has tried and is trying to satisfy the requirements of a definite educational standard, a proper professional spirit and a recognition by the public of the professional standard. There are also 31 well organized State Nurses Associations. Twenty-four States have examining boards and obligatory State registration of nurses, ensuring a sharp line of cleavage between the trained and untrained. State registration is not to be regarded as a sort of high grade intelligence office, but as a bulwark to educational standards. There is an Army Nurse Corps. There is also a Navy Nurse Corps. In connection with Columbia University there is a course in advanced training for nurses established through the cooperation of nurses 10 years ago and maintained by nurses. Teachers College is the professional school of education of Columbia University. There are 30 Departments of Teachers College. The School of Household Arts is a technical school which forms one of the departments of Teachers College. It offers curricula leading to diplomas and degrees in several departments, in this technical school of the Household Arts. The Department of Nursing and Health offers courses in four sections, three for graduates, one for undergraduates.

I. Teaching and Supervision in Training Schools for Nurses.

II. General Administration in Training Schools and Hospitals. The art of nursing is best taught by nurses.

III. Public Service as Teacher-Nurses, Instructors of Probationers, Visiting Nurses, and Board of Health Assistants.

IV. Admission to Training Schools for Nurses, A Preparatory Course.

Then there is a course intended to prepare women for district nursing or for other social and educational work.

This Department of Columbia has up to date graduated more than 70 women, most of whom are now holding positions of importance in training schools and institutions throughout the country.

A most important and encouraging detail in organization history is the growing relationship between the nurses' National and State societies and the National and State societies of the Red Cross. A memorable meeting in London last year was that of the International Council of Nurses. Leaders of nursing thought and practice gathered from the great German Empire, from Great Britain and all her colonies, from France and Italy, from the historic Netherlands and Belgium, from the Scandinavian nations, from gallant Finland, and beautiful Switzerland, from Syria, Cuba, and faraway Japan, and from America. This gathering of representative women from so many parts of the world is evidence of the close kinship between the nurses of the nations.

It is evident that you nurses have schools of good standing, teachers from your own numbers, salaried instructors, tuition fees for instruction received, scholarships properly restricted, and systems of instruction both preparatory and postgradute. Nursing schools are allied with technical schools and universities. Nurses have libraries, a literature, periodicals, periodicals owned, edited and published by nurses. Nurses have societies and they are regulated by State government laws. In other words you have all the marks of a profession. No profession ever rose to a high position more rapidly than has nursing.

The nursing profession is characterized then by splendid ancestry. It is distinguished by its remarkable solidarity, for it has throughout the world a uniformity in ambitions, in methods and accomplishments. The nursing profession is demonstrating itself to be progressive in character. It is based upon science and must share its progressiveness. Its ancestry, its solidarity, its progressiveness, and its beneficence, all mark it as a profession into which you may well be proud to enter.

You who are entering your profession today enter it at a remarkable era in its development, remarkable because of the many activities with which nursing has come to be allied. Once private nursing was considered the only possibility after graduation. Today the avenues of endeavor which open before you are many and worthy of your best efforts. Talents are happily diverse. It behooves each individual to discover in what direction hers lie and then to find a life work in a sphere for which she is suited. The opportunities awaiting the women who have had a training school education are most attractive.

The social relation of the hospital and dispensary to the community at large is now well recognized. In connection with several hospitals social service departments have been organized and are proving of great value. The social department teaches and guides the patient after he leaves the hospital, helping him to keep well with the minimum amount of medicine and hospital care, and instructs the other members of the family how to avoid disease. Patients are followed to their homes. To follow them and instruct them intelligently a woman is needed with a natural breadth of view, quick understanding and wide sympathies, who is in addition a thoroughly trained nurse.

There are other branches of social service open to women, in which a nurse's training is invaluable, viz: health board inspection, factory and bake shop inspection, charity organization work, nurses' settlements. That the personal contact of the factory nurse gives an insight into the lives of the community of laborers which is of untold value is being demonstrated here in Cleveland. In all these branches of service a nurse's training is an absolute requisite.

There are many executive positions in hospitals and other institutions for which it is difficult to find competent women, for they are lacking the proper training. The training schools of hospitals as at present conducted do not satisfactorily train women for holding such positions. It is for this reason that courses at Columbia have been instituted. Four-fifths of the graduating nurses from Teachers College at Columbia University, New York, are now holding administrative or teaching positions in hospitals or training schools, or are in some form of social work. More such women are needed.

The present crusade against tuberculosis is unparalleled, and it may safely be said that the end of the greatest scourge of civilization is within reach. The tuberculosis propaganda offers to trained women many fields for work hitherto little thought of.

Work among the insane is attracting women of your profession. Surgeons are coming to recognize that the giving of anesthetics for purposes of general anesthesia in operative work is best done by women nurses. There are actually records of 26,000 anesthesias without a death. The anesthetists were women. The success of women anesthetists has been amply demonstrated here in your own Lakeside. At the Massachusetts General Hospital, the birthplace of surgical anesthesia, we are employing nurse anesthetists who are paid a good salary. The experiment there has also proved satisfactory. Trained nurses are needed in large industrial establishments; in pure milk stations; in floating hospitals; in preventive work among the poor. Trained nurses must be had to assist in tenement house inspection; to assist Boards of Health; to nurse in the yet unnursed almshouses of the land; trained nurses are needed and are in demand for head nurse positions in hospitals, as superintendents in hospitals. Surgeons need office nurses and operating nurse assistants. Many such positions are now admirably filled by graduates of training schools. The Instructive District Nursing Associations need trained nurses to properly carry on their work among the city poor. A nurse will reap great satisfaction in realizing the social significance of her preventive work among the poor.

It is then evident that private nursing is not your only opportunity, important as it, in itself, is. You are a privileged class entering upon your professional work with unprecedented opportunities opening before you. It is a stimulating time in which to live. Touching social, economic, technical and medical problems on all sides the profession of nursing opens to you an opportunity to assist in their solution. If you are wise you will awaken to your opportunity. You enter a noble heritage made so by no efforts of your own but by those who have unselfishly sought to do their best for the advancement of nursing. Becoming a trained nurse admits you to the association of many gifted and educated women devoted to your profession and you.

Your entrance into this profession carries with it certain obligations both public and personal. As for public obligations: Your profession compels your attention to its interests. Its interests are yours, respect those interests. Not what you get out of life but what you put into it is the basis for satisfaction. You may not be brilliant, you may be only average, but remember that no brilliancy alone can claim immunity from the companionship of the steady, plain, hard working qualities. There is no substitute for thoroughgoing, ardent and sincere earnestness.

Discharge your public obligation by identifying yourself with some phase of your profession at once. Become a specialist in your interests if not in your practice. Become a member of your alumnae association, attend its meetings, attend the meetings of the Associated Alumnae, subscribe to the Journal of Nursing and read it. Think about the problems that are being discussed, have an opinion about them, express that opinion openly, make these problems your own vital problems. Then you will gradually grow informed and will be valuable to your associates and your profession.

There will always be average nurses who know only enough to care for their own immediate interests. Such women live and die and but few care for their coming or going. The average is a low level to be avoided. Being content with the average mediocrity of your associates will never add lustre to your profession.

As for personal obligations: It is said, and often truly, that only the young and recent graduates in nursing are desirable, for they are vigorous and up-to-date. After a nurse has been away from the school three or four years and longer she begins to deteriorate, becomes less desirable as a nurse.

This latter fact should not be so. Do not let this be said of you. Do not allow yourselves to prove rusty and inefficient. Come back every three years at least without fail to the training school and spend a few months getting into touch with new problems and recent practice. It will pay. It will keep you informed. "Come back for renovation, rehabilitation, rejuvenation, resuscitation." Take up some postgraduate work. Go to some other school perhaps than your own for postgraduate work and service.

It will broaden your outlook. Be known as one who keeps abreast of the times. Keep notes of your cases and experiences with patients and physicians, on a card, catalogued for reference. Make observations and record them. Having recorded them you will be able to study these facts of an accumulated experience and you will soon find that you are drawing certain definite conclusions; that you have an opinion of striking interest to yourself and of value possibly to your profession. Use the ward and the sick room as laboratories for study. Do your own thinking.

Have you any plan of life from day to day? You should make one. The ideal nurse is the ideal woman plus her professional knowledge. The ideal woman must be physically fit. Health is the nurse's sole capital. Conserve your health. If you are perfect physically you will be better fitted to control situations otherwise impossible of control. Study yourselves. If sleep is impossible learn to relax for a few minutes each day. The recuperative power of relaxation is great. Exercise in the open air at least once each day. A well-balanced body will hold the mind in check; and vice versa. A sane mind usually dwells in a healthy body.

Read daily something worth while. Let recent novels go by.

Have an avocation. Cultivate a hobby. Become actually interested in something outside of your nursing work. It will broaden your horizon and make life more attractive and yourselves more interesting.

Save your earnings. Invest them. Have an income which should be immediately reinvested. Don't live up to the limit of your income.

Cultivate a breezy cheerfulness, "a nature sloping towards the southern side" as Lowell puts it. I have an enduring faith and confidence in the women who do the routine work of the profession of nursing. "That the yoke of the general nurse is often galling and hard is not to be denied, but she must ever remember that she has no monopoly of the trials and hardships of life."

Cultivate the "talent for silence" as Carlyle calls it. That part of the Hippocratic oath which enjoins secrecy as to the things seen and heard among the sick should be administered to you at graduation. Keep continually in mind the two maxims, "I will keep my mouth as it were with a bridle," and "If thou hast heard a word, let it die with thee."

"To each one of you the practice of nursing will be very much as you make it,—to one a worry, a care, a perpetual annoyance,—to another, a daily joy and a life of as much happiness and usefulness as can well fall to the lot of woman. The spirit of the ancient deaconess should not be wanting from the nurses of this mercenary age. The eyes of your souls have been opened, the range of your sympathies has been widened and your characters have been molded by the events in which you have been active during the past months here in this training school." After all character makes the nurse. A good woman is four-fifths a nurse.

Something needs to be done to attract the attention of the best students in our colleges and technical schools to the great possibilities of medical education. More such students are needed to keep the medical school standards high. We need brilliant minds in our medical schools. The profession of nursing likewise needs the stimulating influence of educated women entering its ranks from all sides, to engage in the many activities and interests allied to nursing which are uppermost. You, then, members of the graduating class, can, if you will, help to raise the general average of your profession and thus attract to your numbers more and more the educated women of the community.

Do not be dismayed at the obligations, additional to those of your practice, which I have partially indicated. At the beginning of a professional career one may be apprehensive lest the burden be too heavy. You have the advantage of youth and strength. Your capacity and knowledge will grow, I hope, with the years. You will, I trust, each be able to add something to the dignity of the profession of nursing and thus assist in the march of human progress.

With your permission I will give to all you nurses, but especially to the members of the graduating class, the watchword for the coming years. The word is "Life." Life in its depth, variety and majesty. The mere passing of time is not life. It has been written:

"To eat and drink and sleep, to be exposed to the darkness and the light; to pace round the mill of habit and turn the wheel of wealth; to make reason our bookkeeper, and convert thought into an implement of trade, this is not life. In all this but a poor fraction of the consciousness of humanity is awakened and the sanctities still slumber which made it right worth while to be.

"Knowledge, truth, love, beauty, goodness, faith, alone give *vitality* to the mechanism of existence."

"Life's a great spirit and busy heart. He most lives who thinks most, feels the noblest, acts the best."

Life is too short to waste,
  In critic peep or cynic bark,
Quarrel or reprimand;
  'Twill soon be dark;
Up! Mind thine own aim, and
  God speed the mark.

—*Emerson.*

Albuminuria of Adolescence; Report of a Case.

By W. C. STONER, M. D., Cleveland.

The presence of albumin in the urine was formerly looked upon as pathognomonic of Bright's disease. It is now recognized as a symptom common to many affections, not of the kidneys alone but of the blood, blood pressure, the general system or the nervous system. Patients with albuminuria have been grouped under two heads, those with, and those without, definite kidney lesions. It is not uncommon to find in apparently healthy individuals a urine which is normal in every way save for the presence of serum albumin which is easily detected in the course of a routine examination. Individuals subjected to strenuous exercise may show temporarily an albuminuria, which subsides as soon as the subject becomes accustomed to the change: such an albuminuria may be found in bicycle riders, foot ball players, and athletes, following severe exertion. The cyclic, orthostatic or postural albuminuria which appears and disappears, depending upon the position of the individual, is supposed by some writers to be due to changes in the blood pressure which take place in changing from a recumbent to an erect posture, while others consider it resultant from anatomic change as in lordosis. This type of albuminuria is found in patients who are asthenic, poorly nourished, anemic, neurasthenic and with low vasomotor tension; a certain percent of these cases have movable kidney.

Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, June 3, 1910.

Another type of the so-called functional albuminuria is the albuminuria of adolescence occurring in the period of puberty from 13 to 16 years of age. This class of patients, too, are generally anemic with an unstable vasomotor system, a neurotic family history, and possibly a congenital weakness of the kidney; here too movable kidneys may be a factor in producing the albuminuria. Such an albuminuria is probably due to failure of the kidney to keep pace in its normal function during the period of rapid physical development of the system, together with the associated unstable vasomotor system.

I am sure it has been the observation of all of us that in the course of routine urinary examination and without the use of the more delicate tests, serum albumin is found, for the presence of which we are unable to account so far as a lesion of the kidney is concerned but which may be due, for example, to inflammatory conditions of the urinary tract below the kidney, as with exudates of blood, pus, lymph, spermatic or prostatic fluid and vaginal secretions. Again we may have the albuminura following the ingestion of large quantities of protein food, the so-called alimentary albuminuria. In about 50% of pregnant women, either primiparae or multiparae, an albuminuria is present which we may consider functional in at least a certain percent of the cases.

Senator considers an albuminuria functional only when in small amount; ephemeral in character and occurring only after undue strain, either physical or mental; and which clears up after removal of the cause.

The question very naturally arises whether overstrain of any character on the kidney or system would produce an albuminuria which is physiological or whether an albuminuria, due to the renal excretion of serum, is not pathological. I believe it is more commonly considered now by most observers that the quantity of albumin excreted has no direct relation to the kidney lesion and that in some of the gravest cases of renal disease the quantity of albumin excreted is comparatively small. Some observers take the view that great quantities of serum albumin may be excreted without any kidney lesion. Blood changes, in which the diffusibility of albumin is increased when the coagulability of the blood is decreased, are thought to cause albuminuria. Such conditions have been corrected by the administration of calcium salts.

Albuminuria of adolescence in certain instances has been looked upon as a persistence of embryonic type since the embryonic kidney secretes albuminous urine up to the time of birth. In other cases it has been looked upon as of reflex nervous origin.

Dukes of London gives an extensive report of his observations on albuminuria of adolescence occurring in boys and girls in school. As medical school examiner he found in no small percent of the youths serum albumin in the urine without any evidences of kidney lesions. He observed that a certain class of boys who were physically strong showed considerable albuminuria, variable in quantity at different times, and he found that this class were able to go to school without any ill effects upon their general health; while in another class of weak, feeble, delicate, overgrown, continuously ailing children who had grown rapidly, albuminuria was only one of many weaknesses; in the latter cases he found it necessary to take the pupils out of school. Statistics show that about 10% of the boys are kept from the army and navy on this account. He found that by placing these patients in bed for a few days the albumin would clear up, or if they remained in the erect position it would disappear after a few days on milk diet. He at first believed that most cases led to kidney disease but his later observations proved that many cases cleared up. A frequent cause, he observed, was overwork, and a common symptom was faintness; in fact he advises that when a boy faints the urine rather than the heart should be examined, thus revealing the condition of the cardiovascular system.

He diagnosed the cases by the dull expression of the face unstable tension of the pulse and the cardiac impulse on the thorax and he classified them as of three types: 1. Those having an increased and very unstable arterial tension in consequence of irritability of the vasomotor nerves, the tension varying from hour to hour and from day to day. This condition is most frequently produced by excess of nitrogenous food and by hereditary tendency to gout. It is benefited by proper mastication, reduction of the amount of protein, and resting after meals. Blaud's pills and alkalies work wonders. 2. Cases with cold, clammy, congested extremities and a large, feeble, compressible pulse, arising from deficient vasomotor control. The heart participates in the deficiency of tone and dilates. He treated this class by giving abundance of food, strychnin and arsenic. 3. Poorly nourished, highly strung, oversensitive neurotics with a thready, unstable pulse. The strain of examinations and habitual loss of sleep are answerable for many of these. They should be given the most equable and least anxious mode of life. He found that bromids and blue mass, with relief of anxiety, gave excellent results in such patients.

He considered the cause to be want of adjustment of the cardiovascular system to changes of blood pressure depending upon a certain state of the vasomotor system which is too readily excited and too readily inhibited, so that the nerves exert an ineffective control over the blood vessels and allow serum albumin to transude through the overdistended capillaries of the kidneys. In fact there probably is a congestive neurosis and so long as the hyperemia, which perpetually fluctuates, is present, the liability to transudation of serum albumin through the dilated capillaries must continue. This unstable condition of the nervous system or circulation, due to defective innervation, is a condition exceedingly common during the years of growth. The albuminuria may occur after apparent recovery. Any trivial cause may throw the system out of gear, for example, constipation, a chill, a cold bath, standing on the wet grass, the position of the body, emotion, nervous depression causing imperfect assimilation of food, and the circulation of impurities with the accompanying headache, fainting, momentary unconsciousness and albuminuria.

The main features of albuminuria of adolescence are therefore its intermissions, variability in the amount of albumin present from hour to hour and from day to day, duration, manifold causes which may each be of slight nature, the whole condition depending upon the state of the cardiovascular system.

The general indications for the treatment of the condition are: 1. Ample but not excessive work and plenty of sleep. 2. Recreation rather than physical drill. Increase the tone of the whole nervous and vascular systems. 3. Food sufficient for growth as well as for wear and tear. The adolescent requires more food than the adult and the girl more than the boy for her growth is more rapid. 4. The scavengers of the body should be brought under control of the will. It should not be necessary to resort to perpetual stimulation to take the place of natural action.

The report of the case which I regard as one of albuminuria of adolescence is as follows:

The patient, a girl, aged 15, I was asked to see on account of her taking on weight abnormally. The family history is unimportant save that a brother had an indefinite history of albuminuria between the ages of 15 and 20.

Previous history: The patient was prematurely born at the sixth month of gestation, weighing only one and one-half pounds, and was brought to maturity by the use of an incubator. She was poorly nourished until eight and one-half years of age, when she began to take on weight rather abnormally. She never was seriously sick, having had none of the infectious diseases of childhood. Operations for the removal of adenoids were performed at the ages of 5 and 10 years. Menstruation was established at 10 and has been regular ever since.

Present condition: She complains of malaise; school work is done with an effort although she has not shown any backwardness; she is nervous and depressed at times; constipation is marked but there is no complaint of urinary disturbance.

Physical examination: The girl is large, heavily built and rather obese, weighing 158 lbs. The facial expression is rather heavy, slightly dull but usually cheerful in appearance. The mouth and nasopharynx are normal as are also the eyes save for a slight suggestion of puffiness of the lower lids at times. The skin is rather dry and rough especially over the extremities. The hands and feet are occasionally cold and clammy. The temperature is subnormal, 97° to 97.2° F. There is no apparent abnormality of the bony framework save a rather marked prominence of the seventh cervical vertebra. Examination of the chest is negative except that the cardiac dulness extends four cm. to the right of the midsternal line and on the left to the nipple line. The pulse shows nothing abnormal although the tension is low; the systolic blood pressure is 90 to 110 mm. of mercury. The examination of the abdomen is negative, likewise that of the nervous system. Blood examination shows 85% hemoglobin, 5,600,000 red blood cells and 7,000 leukocytes; the differential count shows a lymphocytosis of 35%, the other cells being normal in proportion. The urine is light amber colored; the amount 50 to 60 oz.; acid; sp. gr. 1015; serum albumin 2% to 5% by volume; no sugar; indican normal; urea in normal range; and on microscopic examination a few red blood cells, urates and much squamous epithelium.

Treatment: The patient was taken out of a private school and given complete rest in bed with a limited non-protein diet. Elimination through the skin and bowels was encouraged by daily turkish baths and laxatives. A period of complete rest in bed for two weeks had no effect on the quantity of albumin excreted but her weight was reduced 10 lbs. Since that time the patient has had a mixed diet, exercises in moderation, and has been kept out of school. The quantity of albumin still persists although the patient complains of no bad symptoms other than those mentioned.

In view of the fact that we are unable to elicit anything that may be considered a direct cause of the albuminuria, the question very naturally arises whether this is a condition that may eventually develop into a kidney lesion or whether it is due to failure of the kidneys to keep pace in function with the rapid development of the individual which will be eventually corrected. Is this an unusual case of albuminuria of obscure nature or is it one that might be more commonly observed in this period of life were observations on apparently normal individuals more frequently made?

7901 Cedar Ave.

The Tonsils as Sources of General Infection.

By T. A. BURKE, M. D., Cleveland

There is probably no statement so generally admitted as true as that specialism in medicine tends to narrowness, in other words that the surgeon that limits his studies to a particular organ of the body magnifies its importance beyond all reason. It is not my purpose to combat this criticism altogether but I shall content myself with the mere statement that specialism in medicine, as in every other department of human endeavor, has given the impetus to the most enduring progress, and that in our broad generalizations we are quite apt to overlook the less important organs. It is not, therefore, in any apologetic spirit that I propose to discuss the tonsils as sources of general infection.

When I speak of tonsils I include the whole tonsillar belt, commonly called Waldeyer's ring, including the faucial, the pharyngeal and the lingual tonsils. I may be pardoned for briefly outlining some of the salient anatomic features of the lymphatic ring. The pharyngeal tonsil, or as it is sometimes called, Luschka's tonsil or adenoids, is a mass of glandular tissue which becomes in advancing years regularly arranged in lobules, some of which branch out fanlike toward the tubal orifices on either side and when not hypertrophied almost completely fill the vault of the pharynx. The largest component of this ring is represented by the faucial tonsils located between the anterior and posterior pillars of the fauces and extending upward into the supratonsillar fossa. Like the foregoing they are composed of adenoid tissue enclosed in a fibrous capsule. There are some 12 to 15 crypts opening on the free surface of the mucous membrane covering the tonsils. These crypts lead into irregular and communicating channels in the deeper structure of the gland and owing to the movements of the palatoglossus and palatopharyngeus muscles are subject to repeated opening and closing of these ducts, which together with the loose texture of the gland itself makes the tonsil especially inviting for bacterial invasion. This process is still further favored by the lateral pressure exerted in deglutition. The lingual tonsil, located in the posterior third of the tongue, requires no special comment further than the remark that it does not take on particular activity until later life.

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If to this brief description of the tonsils proper we add that there is a further connecting belt of lymphoid tissue between these several organs we have a perfect ring of glandular tissue. Let us remember too the intimate connection of these structures with the retropharyngeal and carotid lymph channels and our picture is complete.

The hypertrophy of these organs, so very common among children, is thought by some persons to be congenital. The weight of authority seems, however, of the opinion that it is not with congenital conditions that we are dealing, but with an inherited tendency either in the shape of the nostril or a general disturbance of the lymphatic system but chiefly to faulty environment during the first years of life in unsuitable clothing, bad hygienic surroundings and the like. There is no question but that lues, the exanthemata, diphtheria, and more than all a lymphatic diathesis are powerful factors in developing a hyperplasia in these glandular structures.

What is the function of these organs? By many they are regarded as residual organs. Packard controverts this view and points out that "Tonsils have been traced in the lower animals from the reptile up to man and that they are more complex in man and therefore cannot be said to be vestiges."

There is no question but that the function of the tonsils is to aid in deglutition but I think in childhood at least that they have from their activity a higher function, the protection of the body against infection, and it is in carrying this greater burden that hypertrophy results with a consequent loss of resistance to invasion. Ballenger sums up the "lines of defence" against microbic invasion through the upper respiratory tract into the following classification:

(a) The mucous secretions are regarded as having in some degree bactericidal properties as they are rich in leukocytes.

(b) The epithelial covering of the mucous membrane of the upper respiratory tract is a mechanical barrier.

(c) The lymphatic tissue composing Waldeyer's ring (tonsillar ring).

(d) The cervical lymphatic glands.

(e) The bronchial lymphatic glands.

(f) The endothelial lining of the blood vessels.

(g) The endothelial lining of the lymph vessels.

(h) The serum of the circulating blood.

(i) The leukocytes in the circulation.

It will be seen by the foregoing that the system is pretty well guarded against the invasion of pathogenic microorganisms. Should the first or the second barrier be overcome, the remaining ones are still ready to bar the further progress of the morbific bacteria.

Located at the very entrance of the internal surface of the body both in the respiratory and alimentary tract we would naturally expect structures of the character I have outlined to be the first source of general infection. There has been from time without memory in the medical mind an association of tonsillitis, rheumatism and chorea. One has often been struck with the sudden transition from tonsillitis to rheumatism and from this to chorea and the similarity of the heart complication in each. With the etiology of tonsillitis we are familiar but the problem of the causation of arthritis and chorea is still unsolved. I recall two cases, both children, that developed endocarditis without the usual history of rheumatism or chorea, and Casselberry of Chicago reports several cases in which not only endocarditis but nephritis followed the attacks of tonsillar inflammation.

A close analysis of those cases showing tuberculous adenitis, especially when the cervical glands are involved, shows almost invariably not only hypertrophy of the tonsillar structures but accumulation of caseous material in the crypts, which when extruded proves very offensive in odor. It is a reasonable conclusion that such conditions are favorable foci for the reception and growth of tubercle bacilli. Strassman, quoted by Ballenger, reports 13 cases of tuberculous tonsils in 21 tuberculous cadavers and I am satisfied that further observations will confirm the opinion that even in those cases in which tubercle bacilli are not found in removed tonsils, that this of itself does not disprove the probable origin of the lung involvement through this source. I am free to admit that primary tuberculosis of the tonsil itself is comparatively rare, but it has been many times observed that the surgical removal of tonsils and adenoids has been followed by pulmonary tuberculosis, in other words, a latent tuberculous process in the tonsil has become acute by interference.

Brown, an English observer, says "certain it is that there is a growing clinical and experimental evidence that the tonsils are the portals of entry for the infectious material in a wide range of diseases, among which are pericarditis, myocarditis, endocarditis, arthritis, chorea, neuritis, adenitis, glandular fever, nephritis, pleurisy, tuberculosis, iritis, phlebitis, osteomyelitis, Hodgkin's disease and possibly even certain forms of leukemia;" and Kretz by a curious process of reasoning even traces cases of phlegmonous appendicitis to tonsillar infection and his observations are supported by Scarlett of Philadelphia, who found in examining many cases of appendicitis "more than 50% of the patients had suffered from angina." I do not subscribe to this opinion but quote it as an evidence of the wide swing of the pendulum; but I do believe that many cases of pneumonia find their infective origin through the tonsil; one case in my service at Charity Hospital died of pneumonia following peritonsillar abscess. There is no doubt that the infection of diphtheria and scarlet fever is almost invariably traceable to infection through the tonsil, not to speak of the association of tonsillitis itself with otitis media, and I think no one questions today the frequency of this cause as the origin of meningitis and brain abscess. In a letter received from Llewellys F. Barker of Johns Hopkins, he assures me that every case of rheumatism in the hospital is referred to the throat department for tonsillectomy. And while this is not strictly a part of this paper it seems proper to say a word on the practical side of the question, and that is the recommendation of the complete removal of hypertrophied or diseased tonsils rather than the more favored tonsillectomy. With either the Matthieu or Mackenzie tonsillotome it is next to impossible to remove the gland entire. Especially is this true of the imbedded supratonsillar portion, and experience has shown the fequency with which reinfection and reformation of new tissue occur.

In conclusion, let me urge a more careful consideration of the tonsil, which, in the opinion of a prominent surgeon, "is of greater clinical importance than the appendix; that it causes more suffering and more deaths."

446 Rose Bldg.

A Brief Review of Some Recent Advances in the Treatment of Pathological Conditions of the Nose.

By W. B. CHAMBERLIN, M. D., Cleveland.

The progress of medical science during the past half century in particular has excited not only a renewed interest and activity on the part of the profession, but it has been the wonder and admiration of the laity. Discoveries which today are so uni-

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Read before the Ashtabula County Medical Society, August 3, 1909.

versally known and accepted as to be commonplace were within the short space of my own medical memory little dreamed of, and if the past may be taken as a measurement of the future, possibilities undreamed of today may be the commonplaces of tomorrow.

But this very progress has brought with it a breadth of knowledge and a wealth of literature at which a man, fresh from college and beginning his medical education might well pale, and turn from the task before him as impossible. To keep abreast of all medical knowledge and literature is indeed impossible, and if one confines his attention to a field apparently limited, he soon discovers that more intimate knowledge has but broadened his horizon, and that the demands of his own special department tax his capacities to the utmost.

So I trust you will pardon me if I invite your attention to some of the more recent advances in a special field of medical endeavor; and if, in so doing, on account of the magnitude of the subject, I confine my remarks to the advance in treatment of some pathological conditions of the nose, passing over their pathology and diagnosis, however interesting that may be.

The unsightly deformities of the external nose, whether traumatic or the result of disease, are no longer neglected, leaving their unfortunate possessors the objects of the pity and curiosity of their associates. Saddle-back nose and kindred deformities are now treated by subcutaneous injections of paraffin with most excellent results, while more serious deformities, the result of a crushing blow upon the nasal bridge and characterized by spreading of the bones with consequent widening of the triangular base, are corrected by completely mobilizing the bony framework and then holding the parts in a correct position until firm union has taken place.

It is only within recent years that obstructive lesions of the nose have received any degree of consideration and that the accompanying discomfort and subsequent impairment of health have been appreciated by the profession. The nose has an important and definite function in the human as well as the animal organism. It is both an organ of special sense and an organ of respiration. The air in passing through it should be warmed, moistened and freed from dust. If, as the result of impaired nasal respiration, the respiratory function is taken over by the mouth, serious, if not permanent injury to the respiratory tract, not to mention the injury to the teeth from long continued mouth breathing, must inevitably follow.

Among the causes of nasal obstruction, malformations of the septum may first claim our attention. In no field of rhinology has there been more progress than in the surgery of the septum. The saw operation of Bosworth, the crushing operation of Asch, not to mention countless others, though still used by some, have, under the leadership of Killian in Germany, Hajek in Austria, and Freer in America, given way to the delicate and surgical submucous resection. That this operation is not applicable to the correction of every kind and degree of septal deformity, goes without saying. That it is preferable to other and cruder methods in the vast majority of cases, must be apparent even to the operator of limited experience. It is an operation of extreme difficulty and nicety, and not to be undertaken lightly. Its results when properly performed are most excellent.

There has been a radical change in the treatment of hypertrophy of the turbinals. The electrocautery, so long prominent in the armamentarium of every rhinologist and often so long remembered by the patient on account of the unfortunate results of its use, is no longer so conspicuous. The cautery still has its place, though the occasions which demand its use are fairly limited. The more exact methods of removing redundant tissue by means of the cold snare or scissors have supplanted it. A good rule in treatment is the following: first reduce all hypertrophy as far as possible by thorough cocainization and adrenalization. After so doing, any tissue which can be moved by the probe over the underlying bone is redundant and should be removed. In my own practise I use adrenalin alone, relying upon it for the contraction. I hesitate to use cocain unless compelled to do so on account of the danger of encouraging the habit. The more elaborate method of Yankauer, of resecting a V shaped piece along the free border of the turbinal, is a procedure of some difficulty, and, in my opinion, ingenious but unnecessary. In turbinal hypertrophy, the frequently marked enlargement of the posterior end, even when the turbinal is anteriorly normal both in size and appearance or the remaining posterior enlargement after the anterior redundancy has been removed, should not be overlooked. Its diagnosis is often a matter of difficulty involving a painstaking examination from in front, under good light, by means of the nasal probe as well as a most careful use of the postnasal mirror. Hypertrophy of the middle turbinal, especially when augmented by an aberrant anterior or posterior ethmoidal cell, though really in the *pars olfactoria,* can cause obstruction in the *pars respiratoria* as well. Syphilis and tuberculosis in the hypertrophic stage will frequently be causes of obstruction. Their diagnosis and treatment are subjects too extensive to be discussed within the limits of this paper.

The attitude of the specialist toward nasal polypi, long considered as being of such benignity by both profession and laity, has in recent years changed decidedly. The removal of nasal polypi may still be a matter of extreme simplicity when consisting merely of a localized hypertrophy and edema. But in the vast majority of cases, in the light of more recent experience, nasal, like aural polypi, must be considered a symptom rather than a disease, pointing often to prolonged and extensive involvment of the accessory cavities of the nose. The outpouring of a foul and irritating secretion is here the exciting cause which produces a circumscribed overgrowth of the tissue with which it comes in contact. In times past, the rule that "once a patient always a patient," could well be applied to the sufferer with nasal polypi. Like the patient with impacted cerumen, he appeared at his doctor's office once in three or six months, the most prominent and accessible polypi were torn off with forceps, and he could again breathe freely through his nose for a few weeks or months, depending upon how thoroughly the surgeon had removed the growths, or upon how quickly his own particular brand of polyps tended to recur. Now the removal of the polypi is but a preliminary to the real work before the rhinologist—the complete removal of every vestige of redundant tissue and the curing of the diseased sinus—generally the prime cause of the trouble.

As in many other fields of medical endeavor, so in rhinology, the modern treatment of chronic pathological conditions is almost entirely surgical. The success in treating these conditions, next to our knowledge of the anatomy and pathology of the structures involved, is due in large measure to the increase and perfection of our armamentarium. The surgery of the nose and especially the deep surgery is attended with considerable difficulty. In addition to working under reflected light, one is forced to work often at the extreme depth of a cavity whose opening in many cases is extremely narrow. An instrument must be very delicate and thin in order not to obstruct the view. At the same time it must be capable of resecting readily both soft and bony tissue. As a rule, instruments of American make, on account of the higher cost of skilled labor in this country, are inferior to those of European manufacture both Austrian and German. Under the suggestions of the specialist, carried out by the skilled instrument designer, we are now supplied with instruments suitable for every conceivable operation, leaving little or nothing to be desired. In no one field has this perfection been more marked than in the instruments designed for the surgery of the sinuses.

The sphenoidal sinus, so long a *terra incognita,* and even after the pathology and anatomy were understood inscribed *noli me tangere,* has now lost its position of security from attack. The sphenoidal sinus is now opened and irrigated, occasionally without preliminary resecting of the middle turbinal, and its anterior wall completely resected without danger of opening the skull cavity. Persistent cases of purulent rhinitis or more commonly nasopharyngitis, due to the involvement of this sinus, are thus cured and cured permanently.

Suppuration within the ethmoidal labyrinth, more commonly divided into the anterior and posterior groups of ethmoidal cells, has in many cases been proved to be the sole cause of nasal polypi. The posterior cells are frequently involved simultaneously with the sphenoid, the anterior with the frontal and maxillary sinuses. Operation upon these cavities without considering the ethmoidal cells would fail to cure the disease in question. The entire ethmoidal labyrinth is readily removed after preliminary resection of the middle turbinal by means of the cold snare, scissors, Hartman's forceps, Hajek hooks and curette. In some cases, this leaves the periostium alone separating the orbit from the nasal cavity. The success of the operation and the freedom from danger, of course, depend upon a most accurate knowledge of the anatomy of the accessory sinuses as well as their frequent deviations from the normal. But it does not follow that as a result of this knowledge, one can bring about a cure in a single operation. Often single cells will be overlooked and successive operations will be necessary.

The most marked and recent advancement in nasal surgery has been manifested in the treatment of diseases of the frontal sinus. The great majority of cases of acute, as well as chronic involvement of the frontal sinus, recover under conservative measures. Reduction of swollen tissue by means of adrenalin and cocain, the removal of redundant tissue with forceps, snare and curette, or the amputation of the anterior end of the middle turbinal, may afford all the drainage necessary. The frontonasal duct is thus rendered accessible and systematic irrigation of the sinus is possible. For those cases which fail to yield to the conservative measures there remains a most ingenious operation devised by Gustav Killian of Freiberg. In Killian's operation the most important objection to the previous radical operations, namely the tremendous and unsightly resultant deformity, is obviated; so that in many cases after operation it is difficult to tell without careful examination which frontal sinus has been operated upon. This freedom from deformity depends upon the careful preservation of the supraorbital ridge. With the exception of this ridge, the anterior wall of the entire sinus is resected, also the sinus floor or orbital roof, while free drainage through the nose is secured by a partial resection of the nasal bone, the middle turbinal and the ethmoidal labyrinth. The external wound is completely closed and healing occurs by first intention. Results in most cases are excellent, though the operation fails to bring about a cure in a small percentage of cases. The modified Killian operation as performed by Jansen in which, through the opening into the frontal sinus and a small opening at the inner orbital margin, all the sinuses are converted into one great communication cavity, has not appealed to me as surgical or necessary.

The maxillary sinus or antrum of Highmore is more frequently involved than any of the other accessory sinuses of the nose—more frequently than all of them combined. Here also the change in treatment has been most marked. As in the other sinuses, so here the average acute infection yields to the establishment of drainage under cocain and adrenalin. When this fails, cure is often effected by a single puncture with a trocar through the inferior meatus and washing with normal salt solution. Such simple procedure may even cure a chronic case of long standing; if not, the puncture may be repeated three or four times with very little discomfort to the patient. If puncture and irrigation fail, we turn to the resection of the anterior third of the inferior turbinal and the establishment of a large opening between nose and sinus by the removal of a large part of the intervening wall. Hajek asserts that this will cure every antral empyema which is not the result of a foreign body or osteonecrosis. My own experience certainly bears out this assertion, as I have brought about complete cures even where the sinus was filled with large masses of polypi. The method has two distinct advantages: first, after a few irrigations, the patient is easily able to wash out his own sinus at home; and second, if the more radical operation of Luc and Caldwell becomes ultimately necessary, part of the operation, namely the resection of the lateral nasal wall, has already been performed. The old operation of Cooper, of making an opening through the alveolar process and irrigating the sinus through a prothesis permanently worn, at present finds few advocates. For those cases uncured by the previous method, we have left the operation of Luc and Caldwell. This involves the primary incision of periostium and mucosa above and parallel to the alveolar border, the elevation of the flap and the resection of the entire facial wall of the sinus as far forward as the nasal process of the superior maxilla. The opening into the nose having already been established, the sinus is now packed with iodoform gauze, the end carried through the nose and the wound completely closed by interrupted sutures. Healing occurs by first intention. Jansen also resects the facial wall, carefully removes every vestige of lining mucosa and then skin-grafts the whole cavity, relying upon a prothesis to close in the permanent external opening. This operation seems to me extremely radical and not demanded by the pathology of the structures involved.

While enumerating these series of triumphs and successes in nasal therapeutics, it is only fair to mention the failures.

The etiology, pathology and treatment of atrophic rhinitis is still unsolved; while the lake regions of Michigan and Canada still extend their summer calls to sufferers from hay fever. Paraffin injections in the former, the antitoxin treatment of Dunbar and alcoholic injections along the nerve trunks in the latter, have done little of what was first expected of them. They have joined the ranks of agents tried for a time and then discarded. Certain cases of hay fever dependent upon nasal deformity and consequent deficient nasal respiration, have in my own hands, and in the hands of many rhinologists, disappeared after the deformity has been corrected. But the great questions of cause, pathology and cure, are still unsettled.

While we may lament the advent of specialism and the consequent passing of men who united in such remarkable degree the capabilities of surgeon, internist and often of oculist or aurist as well; still we are forced to realize that the great advancement in medical science today is largely the result of trained men electing for their life work some field fairly limited and solving to the utmost of their abilities, the problems related to it. But let us hope that in the enthusiasm for the part, the whole is not forgotten. Let us not view the human organism through a vaginal, rectal or nasal speculum, or even from the laboratory through the microscope. Let us be physicians first and specialists afterwards.

318 Euclid Ave.

Aerophagia, Causes and Treatment.

By MORRIS SCHOTT, M. D., Cleveland.

Aerophagia or swallowing of air is a very frequent phenomenon. Two general divisions are recognized: aerophagia by deglutition and aerophagia by inspiration. The former is the more frequently observed, the inspiratory type being of rare occurrence. The deglutition of atmospheric air may be voluntary or involuntary, the involuntary or unconscious being by far the more frequent, which explains the great flatulency often observed in neurasthenic subjects and dyspeptics.

Gastric fermentation may generate a certain amount of gas but the total amount produced during the act of digestion is always very minute. In the fermentation of stomach contents in a fermentation tube we can easily observe and appreciate the extreme tardiness of gas production. The frequent and incessant eructations of some dyspeptics can therefore not be due to fermentation; furthermore in cases of stenosis of the pylorus, in which food remains stagnant in the stomach sometimes for days, and which present the most formidable gastric fermentation, the patients are usually not subject to eructations. An eructation is a voluntary act, more or less conscious, with two stages of production: first, the swallowing of air opens the esophagus and cardiac sphincter and the air accumulated in the stomach makes the return of the same air possible—the second movement.

In the normal state eructations are produced if the stomach has been distended by a too copious meal. They are the result of efforts to relieve the stomach of overdistention, practically the only mechanical pain impression to which this organ is sensitive, since, according to laboratory experiments, one can prick, tear or burn the gastric mucous membrane without eliciting any symptom of pain. The initiation of distention, however, causes an involuntary aerophagia by stimulation, the eructations being simply the effect of an effort to discharge the gases (atmospheric air) swallowed with the food or by the simple act of aerophagia, voluntary or unconscious.

In many neurasthenic dyspeptics the air swallowed may distend the esophagus only, without passing the cardia, but a copious eructation may relieve this class of patients by the psychical impression of that act.

I wish to draw attention to another form, a sialogenous aerophagia, i. e., a simple aerophagia with the addition of an abnormal salivation or sialorrhea, a condition which is often overlooked. The stomach becomes filled with air and saliva and when we examine these patients we may be led to believe that they are afflicted with stenosis of the pylorus, owing to splashing and considerable increase of resonance in the space of Traube if we examine them at a time when there ought to be no remaining food in the stomach; the stomach tube, however, will reveal the true nature of the trouble and confirm our diagnosis of sialogenous aerophagia.

Professor Mathieu believes that all patients having six or seven successive eructations are aerophages, that gastric fermentation alone is not capable of producing interrupted and successive eructations coming so closely one after the other.

Eructations in the morning and on fasting, in subjects who have no food stasis from any cause, are unquestionably due to aerophagia. The absence of odor to the gas which escapes must also guide us in coming to a conclusion; the gas emitted as a result of fermentation or putrefaction has usually a special and striking odor.

The production of eructations in dyspeptics, especially if they are at the same time neuropaths, is very interesting and such cases are far from rare. After eating the patients are conscious of a sensation of distention which they attribute to an abnormal amount of gas in the stomach. They make efforts to expel this gas by either unconscious or willful deglutition: they swallow successively mouthfuls of air, the stomach becomes distended by this procedure and at last the same air is allowed to escape by either a silent or noisy eructation which relieves the painful distention and gives momentary relief. They repeat the same maneuver and with a certain class of hysterics this aerophagia may assume the character of a veritable spasm.

If the deglutition of air is frequently repeated we can sometimes notice the distention or ballooning of the stomach, just as if air had been introduced through a tube or as if some effervescent mixture had been swallowed.

Since we are satisfied that the deglutition of air will distend the stomach, it is also unquestionable that all the air is not expelled by eructations but that a certain quantity passes the pylorus, finding its way into the intestines which are, in turn, also distended. In this manner general gastro-intestinal tympanism develops. The moment aerophagia can be suppressed in these patients their tympanism disappears as if by magic.

While in the service of Mathieu and Roux, I had the opportunity of observing a woman of about 30 years of age who came to the clinic of St. Antoine Hospital, Paris. She had several thousand eructations a day and her social life was rendered unbearable and impossible by the constant eructations and passing of gases per anum. She had aerophagia of the silent type and was of a very neurasthenic temperament. She was given to understand that her condition was due to involuntary aerophagia and being an intelligent woman she lent her efforts towards its suppression and after a few weeks of persuasive education she was able to resume her former social functions.

Aerophagia, in its most severe form, is usually associated with neuropathic conditions, and its intensity is the consequence of such predisposition. The nervous temperament, added to the aerophagia, becomes a factor in the exaggeration of the general nervous condition. Aerophagia is very frequent with hysterical patients and easily assumes a form of excessive intensity, it is with this class of patients especially that one may meet with the gravest forms, hysterical hiccough, spasms, vomiting, false angina, etc. Added to this, with aggravated forms of dyspepsia, we may observe pressure symptoms through elevation or spasmodic fixation of the diaphragm, resulting in interference with normal heart action.

The mechanism of aerophagia by inspiration consists in an inspiratory movement with the glottis closed: it is usually a voluntary or conscious act but is not frequently observed.

Treatment: The most gratifying results can be obtained by informing the patients of the general mechanism of aerophagia and explaining that the eructations are the result of swallowing air. If they practise keeping the mouth wide open they are not able to swallow and cannot return air from the stomach. Roux had the original idea of inserting a cork of good size between the teeth which compelled the patients to keep the mouth wide open without effort on their part, and which educated them not to swallow; they were advised to practise the same method at home and it was found to yield most excellent results. Prevail upon them to try not to expel the air contained in the stomach, since by making efforts at explusion they necessarily make movements of deglutition and swallow more air.

The treatment of sialogenous aerophagia is more difficult than the aerophagia of dyspeptics, for here we have to reduce the sialorrhea which is often due to reflex troubles from some gastric irritation, either with or without coexisting lesions of the gastric mucous membrane.

The starting point of aerophagia being mostly due to gastric disturbances following faulty digestion, it is evident that we have to treat the prevailing dyspepsia by proper alimentation and appropriate medication. Especially indicated are the sedatives, small doses of dionin, codein, rarely morphin or cocain. The best results may be obtained by giving tablespoonful doses of chloroform water diluted with about three-quarters as much, or equal parts of, water given at the beginning or during the course of the crisis.

It is hardly advisable to resort to the many antiseptics. I think their employment has been greatly abused. Under the pretext of counteracting gaseous fermentation, when really it did not exist, so many useless remedies have been employed that in many cases a drug gastritis has been produced.

Generally our patients can be easily cured of their aerophagia if they can be convinced of their vicious habit, and if they can be made to understand that by their eructations they return the atmospheric air which they previously have swallowed by the mouthful.

Rebellious cases are those in patients who do not understand or who possibly feel humiliated by the simplicity of their disease. In others again of an extremely nervous temperament, the spasm of aerophagia may be as difficult to overcome as other spasms of a similar nature, as for example the hysterical hiccough or other hysterical phenomena: in these cases the underlying nervous temperament is largely to blame and has to be treated. In very extreme cases we may have to have recourse to absolute solitary confinement, the heroic treatment of hysterical accidents, for in such conditions psychotherapeutic reasoning has little influence, but the horror of being secluded from the outer world, with privation of liberty and communication by letter or visit, even with their own families, will often stimulate their will power and cause a cessation of all symptoms.

2369 E. 55th St.

Chronic Cephalic Tetanus.

By A. N. DAWSON, M. D., Cleveland.

Tetanus is an acute infectious disease caused by the toxins of the tetanus bacillus. It is characterized clinically by painful muscular spasms affecting first and principally the masseter muscles and those of the neck (trismus), and secondly, those of the trunk, especially the extensors of the spine and limbs (opisthotonus).

A distinction between acute and chronic forms has been made. The latter is commonly termed idiopathic or medical tetanus. It presents, however, the same symptoms as the acute type and differs from it only in the character of onset and the duration of the symptoms. It is now generally accepted that all forms of tetanus are of traumatic origin.

In this brief report neither the pathology of tetanus, nor the mode of action of the toxins liberated at the atria of infection will be discussed. Since the work of Meyer and Ransom and the long series of experiments by Tiberti, these points are generally regarded as settled. Nor is it necessary to describe acute tetanus, the symptoms and diagnosis of which are familiar to all.

The chronic form of tetanus usually manifests itself in spasms of the muscles about the head and neck, hence the term "cephalic tetanus." It, as well as the acute form, is of traumatic origin. When confined to the muscles above the clavicle it is evidently due to infection along the course of the cranial nerves, although Frazier, writing in 1906, believed that it might come from inhalation of the tetanus bacilli in dust or their ingestion with fresh vegetables.

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The symptoms usually come on most insidiously, covering a period of from two weeks to several months. They may occur in the same order as an acute tetanus, beginning with a slight stiffness in the masseters and becoming more severe and extending to the muscles of the arms and legs. The muscles of the chest and abdomen are rarely affected. The spasms may never be so severe as to cause complete rigidity of the jaws and the patient, therefore, may be able to take nourishment fairly well, provided the muscles of the pharynx are not affected. The symptoms may suddenly become aggravated, but a remission usually soon follows.

The course of the disease is tedious and prolonged, even in the favorable cases there is a tendency to exacerbations and remissions. However the periods of freedom from intense trismus usually lengthen and finally the stage of convalescence is reached. The constitutional disturbance is slight if the patient is able to take food and obtain rest. About 25% of the cases get well without treatment. The patient should be under observation for some time, however, since severe symptoms have been manifested after entire freedom from attacks for a month.

The diagnosis of chronic tetanus is important but not always easy. The trismus may simulate that caused by inflammations of the tonsils, nasopharynx and mucous membrane of the mouth: all of these must be carefully examined, under anesthesia if necessary. Tetany, hydrophobia, cerebrospinal meningitis and hysteria must be considered; in most cases the history will suffice to rule these out. The symptoms of chronic tetanus may come on so long after the infection that it is not always easy to obtain an accurate history of a wound.

The indications for treatment are primarily to secure rest from acute attacks; to stimulate if necessary; and to supply nourishing food, giving it per rectum if the patient is unable to swallow. Chloral and chloretone best meet the requirements for a sedative. The suggestion of Willard H. Hutchings, as to the use of chloretone, was followed with good results, though in one of the cases we failed to get as rapid narcotic action as he reports. The antitetanic serum is probably of little use in these cases as the good results from the serum are obtained when it is used as a prophylactic measure. Treatment of the primary wound is of little use unless it is suppurating at the time the symptoms of tetanus appear.

As sequelae of chronic tetanus secondary contractures have been noted. In Damascus and Beirut, Brun saw three cases in which, after prolonged convalescence, there were contractures in the muscles of the jaws and neck, three months, four months and five years respectively after the onset of the disease. Such contractures are due probably to a chronic fibrous myositis and the prognosis as to complete recovery is poor.

It is my privilege to report the two following cases of chronic cephalic tetanus:

Case I. Mr. E. S., aged 37, colored, was injured by a street car on Oct. 27, 1909. He was taken to St. John's Hospital where it was found that he had received a crush of the distal ends of two digits. Amputation of one was required, the other being allowed to granulate over. At the end of two weeks the amputation stump had entirely healed and, the other wound being clean, he was discharged. He complained, however, of a slight stiffness about the jaws and an inconvenience in swallowing; his throat was therefore swabbed out before he left. Two days later the attending surgeon was called to his home. The patient at this time was very excitable and unable to open his mouth, any such attempt causing a spasm of the muscles about the face. In this case there was a question as to liability, and malingering was therefore considered. He was admitted to Charity Hospital under the care of J. Dickenson. At this time there was distinct rigidity of the masseter muscles and any attempt on the part of the patient to separate the jaws or to swallow caused marked spasms of the muscles about the face and neck. The patient also complained of soreness in the extensors of the arms and legs. He was given 30 grs. of chloretone in half an ounce of whiskey by mouth each evening and 10 to 20 grs. in the morning if restless. Under this treatment the patient secured good rest and on waking was able to take nourishment. He remained in the hospital for three weeks and during this time was fairly comfortable. Two weeks later he was entirely free from muscular rigidity and was dismissed. In this case the first symptoms appeared two weeks after the injury and were most marked at the end of three weeks. The patient has had no trouble since the eighth week.

Case II. Mr. J. M., aged 30, farmer, was admitted to F. E. Bunts' service at Charity Hospital on April 7, 1910. The family and previous personal histories were negative. About Feb. 22, 1910, the patient had the second upper right incisor crowned. Three days later the jaw began to swell and soon the whole right side of the face was involved. There was severe pain about the tooth which two weeks later was drawn. As the swelling disappeared the patient had difficulty in opening the mouth. This symptom increased until he was admitted to the hospital, at which time there was some rigidity of all the muscles of the extremities, and a tonic spasm of the masseter on the right side of the face. The slightest pressure over the region of the facial nerve on the right side would elicit marked spasms of all the muscles of the right side of the face including the platysma. Swallowing was difficult though the patient could take liquids. There was ptosis of the right eyelid and all the reflexes were exaggerated. The patient was given 30 grs. of chloretone in half an ounce of whiskey twice daily and 10 grs. of chloral every three hours. Antitetanic serum was also given in doses of 1500 units, twice a day for six doses. After about 48 hours the patient was resting quietly though it was necessary to push the sedative in order to secure complete relaxation. When he was once quieted nutrient enemata were given to supply nourishment without exciting him. On the third day the chloral was stopped and 30 grs. of chloretone twice a day continued. At the end of one week the patient was very sluggish from the effect of the depressants but was able to take soft foods, swallowing being much easier than on admission.

During the third week of treatment the patient developed a gastroenteritis; the chloretone was stopped and there was an immediate exaggeration of the symptoms. The temperature remained normal throughout. At present, after four weeks of treatment the patient is getting 30 grs. of chloretone at night. He is up most of the time, sleeps and eats well, but is still unable to completely separate his jaws without a slight tonic spasm.

This case shows well the long period between the time of infection and the appearance of symptoms, and the prolonged course of the disease.

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Grober: Mitteil. aus den Grenzgeb. der Med. u. Chir., Vol. X, No. 5.

112 Lennox Bldg.

Review of the Progress in Surgery.

Conducted by CHAS. E. BRIGGS, M. D., Cleveland.

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SCOPOLAMIN AND MORPHIN IN NARCOSIS AND IN CHILDBIRTH.

By Robert A. Hatcher, Ph. G., M. D., professor of Pharmacology, Cornell University Medical College; Member of Council on Pharmacy and Chemistry, New York City. *Journal of the A. M. A.*, February 5, 1910, Vol. 54, No. 6, p. 446.

The scientific and clinical interest taken in scopolamin since the suggestion of Schneiderlin in 1900 that it be combined with morphin for narcosis may be judged by the fact that there have been published in the *Journal of the American Medical Association* alone in the last four years some 50 abstracts of original articles on this subject. The present article contains a bibliography of 72 titles, 12 of which are in English.

The pharmacological actions of scopolamin, its surgical uses, and its obstetrical uses are considered. The combination of the two drugs for complete narcosis was apparently based on the misconception of their antagonistic properties, which do not exist at all so far as respiration is concerned, and are quite likely not to exist with reference to circulation. After the sacrifice of some 30 or more lives, rational sentiment is getting back to what appears to have been Schneiderlin's original conception, its use as a preliminary step to inhalation narcosis.

For surgical use, the advantages claimed for the combination are the economy of ether or chloroform, which exists to a certain extent; lessened nausea and emesis, which is also apparent with its subsequent bearing on lessened postoperative pneumonia; lessened excitement in the early stages and a smoother anesthesia, which is doubtless true; decreased salivary secretion, which, however, is rather more likely to prove a disadvantage; long postoperative sleep, often 10 to 14 hours, which is not always advantageous; added facility in the production of spinal anesthesia; its use alone where a general anesthetic is prohibited, which is extremely doubtful. The surgical disadvantages appear to be failure to produce the desired effect in about 25% of the cases; an occasional paralytic effect on the respiration against which artificial respiration and stimulation are ineffectual; a lasting increase in the pulse rate, one case being reported of a patient in good condition succumbing to 1/100 grain scopolamin and ⅛ grain morphin; great variation and inconsistency in its action from an imperceptible effect to fatal toxicity without any appreciable cause; the high mortality, different statistics showing a death rate of 1 to 80, to 1 to 250 for complete unaided narcosis.

In obstetrics it has been claimed that the memory of the event is lost, pain is lessened or abolished, and hemorrhage is less, but the contentions do not appear to be consistent; the disadvantages of the decidedly increased infant mortality, the probably diminished effect of labor, and the extreme caution and great judgment required in its administration render it of very doubtful propriety. Its use as an unaided anesthetic is to be deprecated. Even in small doses to normal individuals as a preliminary to general anesthesia it is unduly dangerous, and this fact, together with the contraindications, the uncertainty of action, and the high degree of judgment required in its administration, render it entirely unsafe for general use. The article should be carefully studied by all who are tempted to make use of the procedure.

NITROUS OXID OXYGEN ANESTHESIA BY THE METHOD OF REBREATHING, WITH ESPECIAL REFERENCE TO THE PREVENTION OF SURGICAL SHOCK.

By Willis D. Gatch, Baltimore. *Jour. of the A. M. A.*, March 5, 1910. Vol. 54, No. 10, p. 775.

Very little attention has been given in recent literature to the administration of nitrous oxid by the method of rebreathing as described in this paper. The work was done in the surgical service of the Johns Hopkins Hospital, and the clinical results were based on 700 administrations. The apparatus resembles the simplest form of nitrous oxid equipment, the essential feature being a metal face mask of such simple mechanical construction that with one adjustment air alone reaches the patient, with the second adjustment gas is inhaled and passed out, and with the third adjustment a given amount of gas in the attached bag is rebreathed without escape or additional air as long as is desired. The oxygen attachment allows administration of oxygen alone, or with the gas, and a side attachment to the mask permits a simultaneous administration of ether by dropping. The apparatus appears to be simple and efficient.

The method of administration is by filling the bag with gas, the patient first expiring several inhalations of fresh gas to wash the air out of the lungs, then continuously rebreathing the gas in the bag a proper length of time, the normal color being preserved by occasional jets of oxygen added to the nitrous oxid; the gas is then gradually exhaled, the bag refilled with fresh gas, and the process repeated.

The propriety and efficiency of the method of rebreathing the gas is discussed from the physiological and clinical standpoint. Symptoms are produced only when carbon dioxid has reached the concentration of 4%, which numerically permits rebreathing about 16 times from an eight liter bag; practically however, rebreathing is permissible to a much greater extent, and the proper degree can be judged safely by the respiration and the pulse rate. The effect of rebreathing is a slowing of the pulse, a sustained rise in blood pressure, a deepening and lowering of the respiration; these effects are in accordance with the views of Yandell Henderson on the relation of carbon dioxid to surgical shock. In addition the gas is heated by rebreathing, and the loss of body heat is reduced. Accumulation of moisture appears to have no bad effect. The method is economical and the apparatus simple, effective, and inexpensive.

THE SEPARATION OF THE COLON FROM ITS MESENTERY: A CLINICAL AND EXPERIMENTAL STUDY.

By Frank E. Bunts, M. D., Cleveland, Ohio. *Annals of Surgery*, June, 1910. Vol. 51, No. 6, p. 837.

While operating on a difficult and complicated case of umbilical hernia, through a misapprehension the descending colon was separated from its mesentery for a distance of about eight inches. The condition of the patient not warranting a resection and anastomosis, the mesocolon was directly reattached to the colon by interrupted sutures. The procedure was successful and the recovery uneventful. The literature afforded little regarding the separation of the colon from its mesentery, and no record of a similar case was found in which suture had been attempted. To determine that the success of the procedure was not the result of accidental adhesions, 10 experiments on dogs were undertaken. From these it was found that after separation of the mesentery close to the colon for a distance of six inches or less, it could be successfully sutured to the intestine, but one case of separation for 12 inches proved fatal. Separation of five or six inches with ligation of the main artery resulted in necrosis, as did also separation of four to six inches without resuture of the mesentery. The bearing of this observation is of much importance and has not, apparently, been generally appreciated before this communication.

DEPRESSED FRACTURE OF THE MALAR BONE, A SIMPLE METHOD OF REDUCTION.

By E. A. Codman, M. D., Assistant Visiting Surgeon, Massachusetts General Hospital, Boston. *Boston Med. & Surg. Jour.*, April 21, 1910. Vol. CLXII, No. 16, p. 532.

It has generally been considered that depressed fracture of the malar bone has been difficult to reduce and hold in proper position, the recurrence of the deformity probably being due to incomplete reduction. Codman has suggested a simple, efficient, and apparently original method of reduction, which he has used successfully in three cases, and which has been used by some of his colleagues with satisfaction. With bullet forceps the bone has been grasped through the swollen tissues, the upper prong being inserted just back of the rim of the orbit, the lower prong through the cheek below the prominence of the malar bone. By firm traction the depression is readily brought up into place and the deformity will not recur if the reduction is complete. No dressing is required, and the two prongs leave no appreciable scar. It requires only momentary anesthesia.

THE SURGERY OF THE LYMPHATIC SYSTEM.

By Handley W. Sampson. *British Medical Journal,* April, 1910. No. 2571, p. 853.

The present article is the first Hunterian lecture on this general subject and deals with the conservative surgery of lymphatic edema as present in cases of cancer and erysipelas, most of the article referring to brawny induration of the arm in cases of breast cancer.

Edema due to cancer may be local, or show itself as a serous effusion of the pleura or peritoneum; less frequently it is seen upon the chest in the early stages of cancer en cuirasse, where there are no cancerous elements in the thickened skin. In the arm the condition is found in 16% of all cases of carcinoma of the breast, more especially of the chronic forms. The edema may be located at various places in the arm. Its importance lies mainly in the excruciating pain it causes; this pain may be intermittent or vary in its location. Subsequently paraylsis appears, passive motion is interfered with, and cyanosis may follow. In the production of this condition local, not general, factors seem to be of most importance. It is due to interference with the lymphatic flow, not to altered venous circulation which is secondary. The lymphatic obstruction is due to a blocking of the main and collateral routes by permeation of the lymphatics with cancerous deposits, shutting off the circulation by the destruction of the lymphatic channels. When this permeation spreads to the lymphatics of the chest wall, pleuritic fluid is found. The operation which the writer terms lymphangioplasty was suggested by the microscopical examination of a silk ligature imbedded in tissue for ten years in which the meshes of the silk remained unobstructed to the passage of fluid. The procedure consists in threading twisted silk through the subcutaneous tissue wih a probe, between small incisions at necessary intervals. A double line of silk is threaded up each side of the flexor and extensor surfaces of the arm dividing the limb longitudinally into four segments from the wrist to the deltoid, at which point the ends are carried back to the scapular region, even to the lumbar region or to the opposite side. The most exacting asepsis is required. Sixteen cases of varying severity were treated with satisfactory results as to pain, swelling and function. A detailed summary of the cases is appended. The method was also satisfactorily applied by a colleague in two cases of permanent edema of the eyelids following erysipelas, in which silk was led from each eyelid through the parotid region into the neck.

A NEW METHOD OF INTRAVENOUS TREATMENT OF VARICOSE VEINS IN THE LEG.

By P. Scharff, *Berliner Klin. Wochenschr.*, March 28, 1910, No. 13, p. 582.

The method is based on the observation that while injections of bichlorid of mercury in syphilis produce no ill effect when the vein is normal, when the vein is pathological, as in varicosities, thrombosis results. The treatment consists in the local intravenous injection of a solution of one part of bichlorid of mercury and 23 parts of sodium chlorid in 3,000 or 5,000 parts of distilled water. The injection is begun with 0.5 c.c. of the weaker solution, working up to 5. c.c., then beginning over again with the stronger solution. It is best to begin in the middle of the leg and work up, additional care being necessary where the veins lie close to the bone, as about the foot and ankle. The more pathological the condition of the veins the weaker the solution and longer interval required. If properly introduced into the lumen of the vein no discomfort is noted, pain being an indication that the solution is entering the tissue outside the vein. The frequency of the injections depends upon the amount of reaction, usually about once or twice a week. Subjective relief is experienced in a short time but complete obliteration and healing of ulcers takes longer. He has used this method extensively controlled by subsequent observations by himself and others for a period of six years in about 90 patients. He gives the details of treatment and progress in several of the more important and aggravated cases.

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EDITORIAL

Organic Chemistry in Its Relation to Medicine.

At a recent meeting of the Experimental Section of the Academy of Medicine, a communication was offered, entitled "The Fate of the Amino Acids in the Organism." Although the subject matter of this paper was naturally far beyond the depth of the great majority of the audience, nevertheless its presentation must have impressed everyone present with the phenomenal rapidity with which medical investigation is advancing and how it is coming to make practical use of the great fund of knowledge regarding the constitution of organic substances offered to it by organic chemistry. But perhaps more important than this is the vindication offered to it by organic chemistry which such a striking piece of research as that presented in this communication affords of the necessity of sounder scientific training for the medical man. Reactionaries there no doubt are, for reactionaries there must always be, but even the most sincere of these must surely admit that a clear understanding of the principles which underlie the chemical processes in the animal body will, at no distant date, have to be a fundamental study in the curriculum of every medical man. Diabetes, gout, obesity, uremia and a multitude of other diseases are unquestionably due to perversions in certain of the chemical processes which underlie the liberation of energy and are therefore essential to the maintenance of the vital spark.

In the intricate assemblage of chemical analyses or syntheses involved in the metabolism of the proteins, for example, and in which each step is dependent for its accomplishment on one that has previously been completed, it is evident that one false step, one unfinished chemical transformation must throw the whole process into confusion and load the organism with abnormal substances which it cannot utilize, which poison it and bring about the symptoms of disease and ultimately cause death. If we could but recognize where this false step is made and what is responsible for it, then would surely follow the discovery of some means by which it could be rectified and the disease cured.

Of course, at present we are just on the border of this mysterious field of research. It is only by the application in medical research of the exact facts and truths of chemistry that we can hope to advance farther into it and the paper above referred to, a résumé of which appears on page 572, illustrates in the best possible manner what the outcome of such research must ultimately be.

Traditions are hard things to deal with even in the development of a medical student's curriculum. Qualitative analysis, inorganic chemistry, materia medica, osteology, pharmacy, etc., have traditional warranty for important places in the first year curriculum but they must soon cease to figure so conspicuously as they do at present in the curricula of most colleges and their place must be given over, not perhaps entirely but at least partially so, to other scientific studies of which organic and physical chemistry are among the most important.

Of those who read these paragraphs, the majority will undoubtedly consider this suggestion as the dream of an unpractical enthusiast. What, they will say, can be the possible use to a practitioner of medicine of such a superficial knowledge of organic chemistry as one given in the medical curriculum must necessarily be? The reply is simply this, that without such knowledge it will soon be impossible for him to understand anything at all of the fundamental principles upon which a great part of the modern sciences of chemical pathology and rational therapeutics is based. He will be an entire outcast from a rapidly growing province of medical knowledge. For these, as for other departments of medicine, there must of course be specialists, men who have been so thoroughly trained in organic chemistry that they can apply its fund of knowledge to developing this new field of medicine. But the general physician, if he is intelligently to apply the rational therapeutics offered to him by the specialist, must know something of the general principles of organic chemistry upon which it is all based.

It is admitted nowadays that neurology is an essential of the medical man's training. Not many years ago it was considered as of value only to the specialist in nervous diseases; and so with bacteriology, pharmacology, clinical microscopy and so on.

The day is here when a course in organic chemistry is become an essential.

J. J. R. M.

The Teaching of Obstetrics.

It is gratifying to note a revival of interest in obstetric teaching, as shown by the report of the special committee appointed by the American Gynecological Society to investigate the courses given in various colleges and to make recommendations of the best methods.

This committee, of which B. C. Hirst was chairman, after having received reports from representative obstetricians who are teaching in universities in Great Britain, Germany, Austria, Switzerland, France, Italy and several of the larger medical schools of this country, upon the particular methods adopted in their universities, made the following recommendations.

"We recommend that the teaching of obstetrics should occupy at least two years of the medical course and that those expecting to practise obstetrics, should be urged to avail themselves of elective opportunities.

"That the number of labor cases personally attended by each undergraduate student should be at least six; under supervision and instruction.

Character of Instruction.

"We recommend all the known methods of teaching this branch of medicine, namely: didactic lectures, clinical lectures, clinical conferences, ward classes and touch courses, hospital and out-patient instruction, manikin practise in operative obstetrics and recitations. Of the first three methods, we recommend especially, clinical lectures and conferences.

"We recommend that ample facilities should be afforded students to make antepartum examinations, including inspection, abdominal palpation, pelvimetry, vaginal examinations, etc.

"We recommend that a two weeks' hospital residence should be required before the out-patient practise.

Scope of Instruction.

"It is recommended, that as obstetrics at present includes pregnancy and parturition, their complications and consequences and the complete recovery of the women after labor; that obstetric instruction should include the medical and surgical treatment of these conditions.

"The tendency of obstetrics to become more surgical in practise and to require a surgical training, is evidenced by the fact that in the medical schools of Europe and in more than one-third of the first 15 medical colleges of this country, the chairs of obstetrics and gynecology are combined under one head."

The recommendations made by the committee are fairly broad, and include most of the available methods of teaching obstetrics. More could be said, however, concerning the relative value of the various methods mentioned.

Obstetric teaching, in so far as compatible with the peculiar nature of the subject and the material at hand, should be made just as nearly clinical as possible and this part of the teaching cannot be too greatly emphasized. The tendency in medical teaching is more and more to decrease the number of purely systematic lectures, and in certain medical colleges these have been entirely discarded as regards obstetrics. It seems, however, that such a step is far too radical inasmuch as few if any colleges have enough material at their command to furnish illustrations for clinical lectures covering all the desired phases of the subject; hence the advisability of retaining the didactic lectures, though decreased in number, as a part of obstetric teaching. To a certain extent the lack of clinical material may be offset by appropriate accessories to didactic teaching including apparatus, specimens, charts, the projectoscope, etc.

When the lectures are transferred to the hospital and given in the form of clinical lectures, illustrated by cases taken down from the ward they become of considerably greater value. The difficulty of conducting an obstetric clinic at a fixed time is evident, but very frequently patients may be delivered before the class and certain obstetric operations performed. A clinical study of the waiting cases, including the methods of antepartum examination, pelvimetry, determination of presentations, etc., may be made, and the normal and complicated puerperium illustrated.

Residence of small sections of the class for a certain period in an obstetric hospital is certainly to be recommended where possible, preferably before the students are assigned to the personal attendance of cases in the out-patient districts. In hospitals in which this is possible, daily bedside instruction is given in the conduct of the puerperium including such complications as may arise, the proper time for getting up, and discharge examinations. The student also makes antepartum examinations as demonstrated at the clinical lecture, makes daily rounds in the nursery, being instructed in the care of the child during early infancy, and attends the labors, seeing the patients delivered by the physician in charge under the best possible conditions for carrying out thorough technic.

After such a preliminary training the student is much better fitted to go into the out-patient department and personally conduct labors. Naturally the instruction may be given more freely in a hospital ward than in a home and hence its advantage for preliminary training, but undoubtedly the student gains his most valuable experience in the out-patient service. The plan followed at present in Western Reserve University for this part of the teaching is illustrative of what may be done. The students actually conduct labors under the supervision of a competent physician, with a trained nurse in attendance. Sufficient supplies are carried to the case to permit of carrying out the methods and technic used in a hospital. Thus the student is shown the possibility of conducting cases under the worst possible conditions as to home surroundings in a thoroughly aseptic and most approved manner. This plan, we think, is far superior to that in vogue in many large hospitals in which the students conduct the labors alone.

The number of cases to be personally conducted, "at least six," is an average of what is required in the better schools of the country but is undoubtedly too small and should be increased as the clinical facilities warrant.

The clinical conferences form a very interesting and valuable part of the clinical teaching. At such conferences students who have attended cases make reports before the whole class and the cases are then discussed and the instructive points in each emphasized, so that the whole class benefits by the experience of each member. The discussion of particular cases actually attended by a member of the class undoubtedly makes a far greater impression upon the whole class than if the same points were brought out in a didactic lecture.

Next to actual clinical teaching practical work upon the manikin with a fetal cadaver furnishes a most valuable part of an obstetrical course. In this work the student may actually perform nearly all of the obstetrical maneuvers and gain additional practise in the diagnosis of presentation and position.

The systematic quiz, always important in medical instruction, will undoubtedly remain as an essential part of the teaching of obstetrics. As the lectures become more of a clinical nature the systematic and thorough quiz covering the whole subject becomes more imperative, and should not be optional as it seems to be in certain schools, according to the committee's report.

In addition to the recommendation of the committee a certain amount of laboratory teaching may be given, being, however, optional. This would consist of obstetrical histology and pathology, including human placentation, and illustrating more definitely the pathological changes in such complications as the toxemias of pregnancy.

It is interesting to note the number of hours, aside from optional work and actual attendance at cases, devoted to the teaching of obstetrics in some of the medical colleges of this country. One difficulty in estimating the exact number of hours lies in the fact that in some instances instruction at ward rounds and on the manikin is given during a residence in the hospital. The following may, however, be considered a fairly accurate statement:

Columbia University, 75 hours, plus ward rounds and manikin work during a three weeks' residence in the hospital, 35 to 40 hours; Cornell University, 144 hours; Harvard University, 128 hours; Jefferson Medical College, 162 hours; Johns Hopkins University, 131 hours; University of Pennsylvania, 109 hours; Western Reserve University, 156 hours. A. H. B.

The Liability of Relatives for the Support of Indigents.

It it often questioned whether the good which charitable institutions do in relieving suffering and distress is not overbalanced by the fact that they create pauperism, foster a spirit of dependence and destroy the sense of personal responsibility. There is no doubt that practically all dispensaries are sinning in this respect to a greater or less degree. It is reassuring to note that the State of Ohio is taking steps to remedy such evils to some extent.

A bill has been passed by the General Assembly to amend the General Code relating to the support of inmates of benevolent institutions at the expense of the State. It provides that, when any person is committed to certain State institutions, the judge making such commitment shall at the same time certify to the superintendent of such institution, and the superintendent shall thereupon enter upon his records the name and address of the guardian, if any appointed, and of the relative or relatives liable for such person's support. At the close of each fiscal year the State Board of Charities shall determine the amount per week which relatives or guardians shall pay for the support of inmates of these institutions, provided that in no case the amount exceed four dollars per week.

The State Board of Charities is empowered to appoint agents to investigate the financial condition of the inmates and of the relatives liable for their support. Legal means is provided to compel payment. It is the intent of this act that a husband be held liable for the support of a wife an inmate of such institution, a wife for a husband, a father or mother for a son or daughter, and a son and daughter or both for a father or mother.

H. H. D.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Chronic Cystitis: In the *Therapeutic Gazette* for May, H. M. Christian considers the treatment of chronic cystitis in the male, and believes that under the most favorable conditions its treatment, in the majority of cases, is accompanied by results far from satisfactory. The laboratory has shown very conclusively in recent years the role played by microorganisms in this affection, but the results unfortunately have not contributed in any great degree to the therapeutics of the disease. The first feature of importance is the removal of the cause, by surgical means if possible, as in calculus, tumor, or urethral stricture. He is rather pessimistic as to the value of drugs internally in chronic cystitis, and the haphazard way in which drugs are prescribed, without any regard to the state of the urine, can be productive of no good results. It is very evident that the same drug will not answer in an acid and an alkaline cystitis. The cystitis produced by the colon bacillus alone, without mixed infection, is an acid cystitis and requires internally the use of alkaline diuretics, as citrate and acetate of potash, with infusion of buchu and the free use of alkaline mineral waters. When however, the urine is alkaline the internal use of one of the genito-urinary antiseptics is indicated. In their order of value he mentions urotropin, sodium salicylate, or benzoate, oil gaultheria, oil eucalyptus, salol, and boric acid. His favorite prescription in such conditions is a combination in capsule form of five grains each of urotropin and salol, four times daily. It will be found to act most happily in cases in which there is ammoniacal urine with marked phosphatic deposit. It is well to bear in mind in employing urotropin that it occasionally causes strangury and hematuria. By far the most important feature in the treatment of chronic cystitis is the local treatment in the shape of vesical irrigation with medicated fluids He employs a combination of drugs; the bladder having been emptied, a soft rubber catheter or a Mercier is introduced until its eye lies just within the bladder, the irrigator having been previously filled with one pint of warm distilled water to which is added one grain of potassium premanganate and one grain of nitrate of silver. There is no chemical change, each drug apparently acting on its own initiative. This solution is introduced through the catheter into the bladder until the viscus is comfortably distended, not painfully. The solution is allowed to pass out and the maneuver is repeated, after which half an ounce of some one of the silver salts is injected through the catheter and allowed to remain. He calls attention to the great value of the tied-in catheter is giving comfort and relief to many otherwise miserable.

Thread Worms: In the *American Journal of Medical Sciences* for May, Oscar M. Schloss summarizes the treatment for thread worms, there being several observations not generally recognized which have a direct bearing on the treatment for this parasite. An experiment of Grazzi shows that the worms may arrive at maturity in the intestines during the last four or five weeks following a single infection. Since it is probable that fresh parasites constantly develop through autoinfection, the treatment should be continued for six weeks. The normal habitat of this worm is the cecum or appendix, and not the rectum and colon as often stated. When the females become impregnated they migrate to the lower portions of the large intestine to discharge their ova. Thus the treatment should be given with two aims; first, to remove the worms which have migrated to the large intestine; and next, to expel those in the cecum or appendix. For the former, the usual irrigations of salt water, quassia, garlic, etc., are effective, but as fluid injected per rectum may not always reach the cecum, internal treatment is of importance. Santonin is probably the most useful drug in this condition and is best given in doses of one to three grains, with the same amount of calomel for three successive evenings. On the first and third mornings of treatment a cathartic should be given. This treatment may be repeated two or three times during the first three weeks. During the first two or three weeks, the irrigations should be given each evening and from 6 to 20 ounces (depending on the age of the patient) can be given in each injection. Later the injections may be given every alternate evening, and finally twice a week. Every effort should be made to prevent auto-infection, as this is a potent factor in keeping up the disease. At night a mild mercurial ointment, 10 to 20%, may be applied around the rectum. The child should be prevented from scratching and putting his fingers into his mouth. The usual treatment is often unsatisfactory; the mothers usually give the irrigations only during the period of active symptoms, or while the worms are passed, and often within two or four months the patient again shows signs of severe infection. Although this parasite rarely if ever produces dangerous symptoms, yet the continual irritation which they set up may undermine the general health; this serves as a sufficient indication for thorough treatment.

Strychnin: In the *Medical Record* for May 28, William F. Waugh considers the use of strychnin in the pneumonia of the aged. In the aged the vital forces are ebbing and in fact the most important point is that the reserves of vitality have usually been spent. He believes that the occurrence of pneumonia in the aged is a formal indication for the administration of strychnin. We need not wait for debility, low vascular tension, or any other of the indications pointing to the need for strychnin in the young; we have an imperative call for this potent helper in the simple fact of pneumonia in the aged. Strychnin arouses the dormant powers and energizes them; it awakens the sensibility; restores the elasticity, the spring of a younger age and enhances every vital function. The bases of physical power, the digestion, the respiration and the nervous organization on which all depend, are restored to activity and power by this most potent agent. The heart shares in the general toning and the circulation is sustained. The eliminants are likewise energized and the toxemia is naturally reduced to safe limits. Despite the tendency of recent teaching Waugh does not look on fever as altogether beneficent, and with Juergensen looks upon it as the chief element in the causation of the cardiac debility that constitutes the most serious danger to the patient's life. It is obviously desirable to repress the fever with as little general sedation as possible, and here is another indication for strychnin since this drug notably enhances the antipyretic action of the heat reducers, such as aconitin and veratrin, when administered with them: this fact first announced by Oliveira Castro, has since been confirmed by many observers. Of the strychnin salts his preference is for the arsenate, and this only when given in proper doses. The man who gives a bulky dose of strychnin every 4, 6 or 8 hours never learns to use it. The solubility of a drug regulates its absorption, the manifestation of its activity and its elimination. Strychnin arsenate may be administered in doses of half a milligram every quarter hour, half hour, or hour, repeated until exactly the desired tonicity has been secured, then often enough to maintain this. Employed in this manner with a clear idea of what it will do one need not be incredulous of the reports of its efficacy. A given dose of strychnin always exerts exactly similar activity to any other dose of the same size as to quality and quantity of effect, but the reaction of each patient differs. There is no such thing as a "dose." The true dose is what suffices to produce the desired effect.

Digitalis: The *New York Medical Journal* for May 28 quotes Schmiedeberg's recent communication on the standardization of digitalis, in which he draws attention to many interesting points in connection with its action. He states that the three principal active constituents, digitalin, digitalein, and digitoxin, are relatively slowly absorbed by the organism, and the rate of absorption differs in the case of each. This explains also the variation in action, so often observed to follow the use of digitalis. On the other hand abnormal conditions in the digestive apparatus are apt to affect the rate of absorption, and the presence of ferments in the intestinal tract must also be taken into consideration, as by their action these glucosids may be decomposed. He regards the supply of digitalis leaves of uniform pharmacological action as the principal step to be undertaken: he proposes that all the digitalis leaves used for medicinal use should first be standardized so as to correspond exactly to the activity of the leaves of former years. By this means a regular supply, year by year, of a preparation of uniform pharmacologic value would be assured, and the physician placed in a position to record his observations, based on the use of a preparation of constant action. He used strophanthin as a standard, and found that frogs were the best animals for his purpose: in all, 207 experiments were made, the digitalis used being the powdered leaves physiologically standardized by the usual methods. The experiments showed that the proportion, as regarded activity, of leaves A to B was as 100 to 134: i. e., to obtain an infusion equal in strength to a preparation obtained from one gram of leaves A and 100 c.c. of water, it would be necessary to employ 1.34 grams of leaves B.

Hypertension: In the *Journal A. M. A.* for May 21, Joseph A. Miller states than until comparatively recently high blood pressure has been considered an indication for active therapy, rather than a compensatory process demanding treatment of the underlying condition. Unfortunately our knowledge of the primary factors responsible for the condition are still far from complete. We know that certain anatomic changes, as the vascular varieties of nephritis, sclerosis of the celiac axis or its branches, or of the aorta above the diaphragm, lead to, or are associated with, hypertension. In addition, however, there are cases of hypertension in which careful anatomic studies have failed to reveal the cause and which for the present we must designate as idiopathic. The view that hypertension is a compensatory process merits the most careful consideration. As to nitroglycerin, there is considerable difference of opinion in regard to the proper dosage: some have given enormous doses without ill effect. Doses have been given from 2½ to 7 grains, while on the other hand severe collapse has resulted from comparatively small doses, as 1/120 grain. Initial large doses should never be given, about 1/100 grain being the usual amount. His conclusions are as follows: 1. In moderate doses, active preparations of nitroglycerin and sodium nitrite temporarily reduce the blood pressure in the majority of cases of hypertension. 2. Erythrol tetranitrate causes a more prolonged reduction in blood pressure than nitroglycerin or sodium nitrite, but so frequently causes severe headache that its clinical value is much impaired. 3. Headache after any vasodilator does not mean that we are getting the physiologic effect in the sense that the blood pressure is reduced, as the headache may appear independently of any change in pressure. 4. A patient's blood pressure may be decidedly affected by one of the vasodilators, and uninfluenced by another. 5. Occasionally the blood pressure of patients with marked hypertension may show very marked fluctuations without apparent cause. 6. A single sweat reduces hypertension less than a moderate dose of a vasodilator. If sweats are given daily, a rather marked reduction of pressure lasting throughout the day is observed not infrequently. When the sweats are discontinued, the blood pressure soon returns to its previous level. With the increasing tendency to assume that hypertension is compensatory in character, the only rational method of treatment is to remove the cause: here we reach the borderline of our knowledge, and at present increased elimination through skin and bowels, and mental and physical quiet form the most satisfactory procedures.

Hemoptysis: In the *American Journal of Clinical Medicine* for June, Frederick S. Minus *(Canadian Practitioner and Review)* summarizes the use of nitroglycerin in hemoptysis as follows: 1. While there may be other elements in the production of hemoptysis, it is evident that the blood pressure in the pulmonary area plays an important part. 2. Estimation of blood pressure in the pulmonary area cannot ordinarily be made experimentally. 3. Clinical observation, however, goes to show that there is a relation between pulmonary pressure and systemic pressure. 4. Such preparations as nitroglycerin are capable of reducing blood pressure in the vascular system, and by their use it would seem to be possible to keep the pressure in the pulmonary area in any particular case reasonably below the danger point. 5. The drug should be administered in small doses and may be continued over long periods. 6. The results have been due to long study of over 600 cases of pulmonary tuberculosis. and the treatment, as carried out for nearly two years, has given time to prove the efficiency of the same. 7. It would seem to be indicated that this drug should be administered in the morning some time before rising, and then, say, at 7:30 a. m., 11:30 a. m., 4:30 p. m. and 7:30 p. m. in order to have the result produced before the blood pressure is raised by the exertion incident to toilet, meals, etc. 8. When 1/100 grain of nitroglycerin will reduce the blood pressure 15 mm. in less than 10 minutes, the same dose given four times a day, for say, two weeks, should be sufficient to maintain a lower pressure than the individual's normal. 9. While the administration of nitroglycerin has not proved to be an absolute preventive, still, in the large majority of cases with a previous history of hemoptysis or the occurrence of the same while in residence, it has been clearly proved to be efficacious in reducing the frequency of the complication and in lessening the amount of blood lost when it does occur.

Drugs in Constipation: In the May number of the *Practitioner,* W. Camac Wilkinson treats of the use of drugs in constipation, for while we affect to decry and condemn their use in constipation, they still remain our chief remedies. At all times the use of drugs requires clinical acumen, common sense and shrewd observation, lest the drugs make matters worse by establishing a still greater inhibition of the ordinary processes, digestive, muscular, and nervous, upon which the regular and complete evacuation of the bowels depends. Drugs have a specific affinity for certain tissues—a clinical fact which Ehrlich's brilliant hypothesis explains so simply—and when we desire to obtain one effect, we must remember also that few drugs affect one organ or tissue exclusively. This is especially true of purgative drugs. Constipation may be due to widely different causes and the choice of the drug, the dose, and the duration of its use largely depend upon the cause. Thus, if spasm or obstruction be the cause, purgatives which increase spasm and peristalsis are out of court. After all, constipation is not a disease but a symptom, which arises when the rhythmic, usually daily evacuation of the bowels fails. The severest and gravest form is absolute constipation. When neither feces nor flatus can be expelled, a striking symptom in all forms of intestinal obstruction, purgative drugs must never be used, since they cannot help the bowel to empty itself and can only add gravity to very grave conditions. In absolute constipation the only drug that eases the symptoms and gives temporary respite by allaying spasm is opium or morphin, and when the diagnosis is clear ⅙ to ¼ grain of morphin in an adult, repeated at most in four hours, will give infinite relief and allow time for preparation for surgical interference. With these limitations morphin is the only drug to be thought of in absolute constipation. In other forms of constipation when spasm seems to check natural action of the bowels, morphin may be of use. Thus in lead colic, when the spasm invades also the abdominal muscles and produces the hard, retracted (boat shaped) abdomen, morphin may annul the spasm of the intestines and help evacuation. In extremely chronic forms of constipation one must use purgatives as little as possible particularly in neurasthenic persons. In children one must aim at improving nutrition and general health; diet is of far greater importance than drugs. One should exercise care and discrimination in the use of drugs for habitual constipation, remembering the patient as well as the symptom. Some patients will take with benefit small doses of aloin, cascara, etc. for many years and keep the dose within moderate bounds. Here each case must be treated on its own merits and individual idiosyncrasies carefully studied.

Eclampsia: Ross McPherson in *American Medicine* considers puerperal eclampsia, asserting that the disease takes its name from a symptom: it is therefore better spoken of as "toxemia of the convulsive type" since there are several forms of toxemia occurring during the pregnant state, some of which are not characterized by convulsions but are otherwise practically the same as eclampsia. He divides the treatment into prophylactic, operative and curative. While the common custom is to use chloroform to control the convulsions, he believes it better to get along without it if possible; he has used scopolamin gr. 1/100 and morphin sulphate gr. 1/6 given hypodermically at hour intervals for three doses if necessary and has been highly pleased with the results. The amount of morphin given is not sufficient to look up the secretions, the usual objection to its use, and its beneficial effects are very striking, one or two doses being in many cases quite sufficient. If desired, hyoscin may be substituted for the scopolamin. It is of course understood that the medication in no way acts as a cure for the condition but merely as an adjuvant, giving the organism time to find its equilibrium, provided the destruction to the excretory organs has not been too great. In the convulsive toxemia of pregnancy we have a condition in which the balance between elimination and absorption is increased in favor of absorption, as a result of the destruction of the parenchyma of the excretory organs. The cause of the destruction is due to some toxin floating in the blood: this is probably of the nature of an enzyme which causes, among other things, a destruction of the cell by autolysis and a solution of the endothelium of the blood vessels, allowing the vessels to rupture during the high pressure of the convulsions. The treatment consists of carefully watching the patient, in order to assist the organism to properly excrete, and to interfere when it is no longer able to do so. Once having removed the cause, namely the products of conception, treat the case by controlling the convulsions and assisting elimination, trying to use methods which will not throw more strain on the excretory organs and remembering that in many cases the destruction to these organs is already so great that any treatment will be of no avail.

Neuralgia: D'orsay Hecht, in the *Medical Record* for June 18, gives his personal experience with deep intraneural or perineural injections in the treatment of some forms of neuralgia. In trifacial neuralgia the observance of particular landmarks, and the use of an especially designed needle are essential to the success of these injections. General anesthesia is neither necessary nor desirable. The injections are of alcohol, in ascending strengths of 70, 80 and 90%, and a sharp cutting-edge needle is used. Analgesia in the area supplied by the branch injected is the best criterion of having successfully reached the nerve. In two instances, however, analgesia was prompt and marked, and yet the paroxysms of pain continued unabated. Facial edema is often marked but should not give rise to anxiety, although its subsidence may be slow. It should be added that tumors involving the fifth nerve, as well as syphilis and migraine, can and do give rise to pains that may readily deceive as trifacial neuralgia. In a total of 180 injections there was an average of 3¾ injections required to subdue the original pain. In point of therapeutic results, 37 cases were distinctly benefited, 11 were improved, eight were unimproved and four were aggravated. Of the 37 benefited, one was entirely free from pain for one year and eight months; the shortest interval was two weeks. As concerns the solution available for the injection treatment of sciatica, it should be at the outset emphatically stated that *alcohol is strictly contraindicated in this affection,* on the ground of its being harmful and even disastrous when injected into a mixed (sensorimotor) nerve. By reducing diagnostic error to a minimum, the deep intraneural injections of salt solution stand approved in the acute, subacute, and early, mildly chronic, non-symptomatic cases of sciatica, and also in the group that may be classed from the site and distribution of the pain as myalgias. In most instances the relief after treatment was almost immediate and complete. In a few patients only were more than three injections at intervals of 48 hours apart indicated. There were neither unpleasant effects nor untoward complications.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph. G., Ph. D.

The Pharmacopoeial Convention: The Ninth Decennial Convention of the United States Pharmacopoeia was held in Washington, May 10, 11 and 12.

The discussions, while animated, were free from acrimony, and the "General Principles" adopted for guidance of the new Committee on Revision while progressive, were conservative rather than radical.

Of these "Principles" those of medical interest were: a continuance of insertion of average doses (a resolution to insert a table on maximum doses being voted down, since it was objected to by the medical delegates); insertion of official abbreviations; insertions (in appendix) of recipes for diagnostic reagents; and the adoption of an official medicine dropper "adapted to drop 20 drops of distilled water to a gram at 15° C."

As to the scope of the next pharmacopoeia, several efforts to restrict the number of remedies failed to pass, the "Principle" adopted, covering this question, being about the same as that adopted at the convention of 1900. Because of the increased importance of the book since the passage of the National Pure Food Law, the Revision Committee was increased from 25 to 50 members.

The convention was attended by delegates from 79 medical bodies (including the medical branches of the U. S. Government Service); from 74 pharmaceutical bodies and from the American Chemical Society; from the Association of Official Agricultural Chemists; from the Association of State and National Food and Dairy Departments; and from the National Dental Association. Dr Harvey W. Wiley was elected President of the convention; Dr N. S. Davis of Chicago and Dr O. T. Osborne of New Haven were chosen among the Vice-presidents; Dr Motter of Washington was elected as Secretary; while Dr Simmons, Secretary of the A. M. A., was reelected as a member of the board of trustees.

Of the 50 members of the new committee of revision 11 are physicians, one, Dr Philip Marvel of Atlantic City, being in active practise.

It is a matter of local interest that for the first time in the 90 years of American pharmacopoeial history, Cleveland has representation on the Committee on Revision and that by no less than three members, Dr Torald Sollmann, Mr. Lewis C. Hopp and Prof. H. V. Arny.

Salol Chloroform: This syrupy liquid, made by mixing equal quantities of the two chemicals is recommended by Bourliar (*Pharm. Zentralhalle,* through *Druggists Circular, 54,* 274) for treatment of infectious wounds. Dropping 30 drops of the solution into the wound the chloroform evaporates leaving the wound covered with a fine dust of salol, which brings about complete antisepsis. On account of its freedom from odor and its powerful disinfectant action, it is reputed to surpass iodoform-ether.

Digitalis Preparations: Sharpe *(Proceedings Royal Society of Medicine,* through *Druggists Circular, 54,* 274) reiterates that frequently inferiority of samples of digitalis leaves is due to faulty drying, the damp leaves undergoing a fermentation that decomposes the glucosids. He does not care for the infusion, finding the tincture far more efficient. He claims that the tincture should not be used after it is a year old. He has little faith in the isolated glucosids and has never known them to succeed where the tincture, or pills of powdered digitalis, squill and cascara, have failed.

Chromium Sulphate: Besides its use in neurasthenia, this chemical is reported by Ross *(Med. Council,* through *Druggists Circular, 54,* 274) of value in prostatic troubles. The patient is started on four grain doses four times a day for a week and is then given eight grains three times a day along with 1/130 grain strychnin.

Magma of Bismuth: The danger attending the use of bismuth subnitrate is pointed out by Raubenheimer *(Merck's Report, 19,* 156) who quotes many medical and chemical authorities showing that the drug on entering the stomach is apt to form the poisonous acid salt. Even so simple an operation as trituration of the subnitrate with water occasions liberation of free acid. For this reason, the use of the subcarbonate or, better still, the hydroxid is much to be preferred, a recipe for the latter being given in the National Formulary as Magma Bismuthi.

The rest of Raubenheimer's paper deals with an improved process of manufacture of the magma which is likely to be adopted in the forthcoming edition of the Formulary.

An Incompatible Prescription: A prescription calling for potassium chlorate, two drams; digalen (Cloetta), spirit of nitrous ether and compound tincture of cardamom, each two fluidrams; water to make six fluidounces; when dispensed gave a solution of a pink-red color due to the cochineal in the compound tincture of cardamom. After 20 minutes, the pink liquid changes to a muddy yellow mixture, which on standing, deposits a yellow-brown precipitate leaving a colorless supernatant liquid. The precipitate contains crystals of potassium chlorate, which salt, while soluble in the water prescribed, is precipitated by the alcohol in the spirit of nitrous ether. The yellowish part of the precipitate is due to the cinnamon of the compound tincture of cardamom.

The bleaching action is due to hydrolysis of the ethyl nitrite in the spirit of nitrous ether, the first products being ethyl hydrate (alcohol) and nitrous acid and the eventual dissociation of this into nitrogen dioxid and oxygen. The potassium chlorate hastened the bleaching action which, however, occurred when the chlorate was omitted.

The dissociation of the ethyl nitrite is with formation of nitrous acid and this in turn decomposes the glucosid in the digalen. The conclusions of the author, Donald McEwan *(British and Colonial Druggist,* through *Merck's Report, 19,* 166) are that inasmuch as the digalen and ethyl nitrite are decomposed and the potassium chlorate is precipitated, the mixture is physiologically inert and presents a difficulty for which no remedy can be suggested.

Who Owns the Prescription? A paper on this much discussed subject was read by J. Winchell Forbes at the recent meeting of the American Pharmaceutical Association and he arrives at the conclusion that, as an intermediary between the physician and the druggist, it is simply a written communication and, as such, remains in the possession of the recipient. To this he adds that when the instructions of the communication are complied with, *as a medical means,* its life as a prescription ceases and it forthwith is reduced to a simple communication. The writer closes with an expression of hope of ultimate legislation prohibiting the renewal of a prescription for anyone without a written order of the physician; prohibiting the giving of a copy of the prescription; and requiring the keeping by the pharmacist of all prescriptions filled, as a matter of record *(Practical Druggist, 27,* 429).

Stability of Calcium Sulphid Tablets: At the same meeting of the American Pharmaceutical Association, Schmidt and Engelhardt presented a paper reporting that, contrary to the usual opinion, calcium sulphid pills, tablets and tablet triturates were stable even after three years standing. Seventy commercial samples were examined and all were full strength *(Practical Druggist, 27,* 429).

Permanence of Fluidextracts: At the same meeting, W. L. Scoville reported experiments on the deterioration of alkaloidal fluid extracts and tinctures kept from one to three years in partly filled containers and exposed to light. His conclusions are: coca and sanguinaria preparations deteriorate rapidly; cinchona preparations deteriorate with marked precipitation; pilocarpus preparations deteriorate slightly and precipitate considerably; colchicum and conium preparations do not change much; gelsemium and hydrastis preparations change scarcely at all; while preparations of other alkaloidal drugs lose no strength whatever *(Practical Druggist, 27,* 431).

Elaterin: According to A. Berg *(Les Nouveaux Remédes,* through *American Druggist, 56,* 361) this substance does not exist as such in the fruit of Ecballium, but is formed in the juice of this fruit by action of two of its constituents; the diastasic ferment, elaterose, and an armorphous glucosid. His work shows that the formula of elaterin is $C_{28}H_{33}O_7$ and that its molecule contains two phenol groups, an acetyl group, an acetonic group and a lactone compound.

Deterioration of Tincture Iodin: C. Courton *(Journ. de Pharm. et Chemie,* through *Deutsch Amerikanische Apotheker-Zeitung, 31,* 32) discusses the well known change that occurs in tincture of iodin upon standing, but adds the new fact that practically all loss of iodin occurs in seven months, at which time a tincture originally prepared after the French Codex (87.63 grams iodin to a liter) contained 72.32 grams iodin, 15.36 grams hydriodic acid and small amounts of aldehyd and acetic ether.

Cumbersome Official Names: The revisers of the forthcoming German Pharmacopoeia are confronted with an interesting and perplexing problem in the Latin names of the synthetic chemicals which have been chosen for admission. For instance for novocain, the Latin name paraminobenzoyldiaethylaminoaethanolum hydrochloridum is proposed. This "fist-full" is meeting with considerable objection and the simpler name aethamine is proposed. *(Pharm. Zeitung,* through *American Journal of Pharmacy, 82,* 260).

Cultivated vs. Wild Belladonna: Contrary to the usual opinion, cultivated belladonna is not only as rich in alkaloids as is the wild, but moreover if the plants are properly manured the proportion of alkaloids may be doubled. T. Chevalier *(Comptes Rend.,* through *American Journal of Pharmacy, 82,* 262).

Apomorphin Hydrochlorid: Some samples in the market contain as much as 75% trimorphin hydrochlorid. The presence of small amounts of this impurity (produced from morphin during the process of manufacture of apomorphin) is unavoidable, but large quantities are objectionable *(Pharm. Journal,* through *American Journal of Pharmacy, 82,* 262).

A Nux Vomica Adulterant: Planchon and Tuillet *(Répert. Pharm.,* through *American Journal of Pharmacy, 82,* 264) discuss a substance called "Corozo" used for adulterating powdered nux vomica. It is shipped in large quantities from Australia to Hamburg.

Sterilizing Ampoules: According to Baroni *(Chemist and Druggist,* through *American Journal of Pharmacy, 82,* 264) steam at 112° C. must be used for this purpose. In the case of adrenalin chlorid and physostigmin salicylate, the solutions darken unless the air space is filled with carbon dioxid gas.

Arylarsonates: J. E. Lane *(Brit. Med. Journal,* through *American Journal of Pharmacy, 82,* 265) sounds the warning that such organic arsenic preparations as orsudan and soamine are not free from dangerous effects; he noted four cases of blindness following the use of these preparations.

Protargol Solutions: F. Goldman *(Apoth. Ztg.,* through *American Journal of Pharmacy, 82,* 266) states that the use of glycerin in making protargol solutions is unnecessary and objectionable and that heat should be avoided. Solution in cold water is simple, if the chemical is sprinkled on the surface of the water.

Formaldehyd in Sugar Cane Juice: An interesting illustration of the "disagreement of doctors" is shown in a paper, under the title given above, by Yoder and Taggart *(Journal of Industrial Chemistry, 2,* 260). Trillat has shown that formaldehyd is produced when sugar is burned and also in the process of caramelization of sugar. A. A. Ramsey has reported that formaldehyd is formed during even the simple boiling of sugar solutions and this statement has been made use of by certain jam manufacturers in whose products formaldehyd was found. La Wall (this Journal *8,* 566) analyst of the Pennsylvania Food Commission, contradicted this assertion, claiming that the supposed formaldehyd reaction was due to a faulty test. Now come the present authors, chemists at the Louisiana Sugar Experiment Station: after what seems a careful review of all the known formaldehyd tests, the writers report their work which shows: First, that when sugar cane juice or sugar solution is acidulated and distilled over a naked flame, the distillate reacts for formaldehyd, the quantity increasing in the distillates as the residue in the flask becomes caramelized. Second, that even when a 10% or 15% unacidulated sugar solution is distilled with steam, the distillate shows traces of formaldehyd. The writers find that Richardson's modification of Hehner's test is the most delicate of all the formaldehyd reactions and that it can be used quantitatively by the colorimetric method.

Academy of Medicine of Cleveland.

EXPERIMENTAL MEDICINE SECTION.

The fiftieth regular meeting was held at the Cleveland Medical Library, Friday, May 20, C. F. Hoover in the chair.

The program was as follows:

The Fate of the Amino Acids in the Organism, Graham Lusk, Prof. of Physiology, Cornell University Medical College. (The following is an abstract of this paper which is published in full in the *Journal of the American Chemical Society,* 1910, Vol. 32, p. 671).

"Protein the fundamental constituent of protoplasm is made up of various nitrogen-containing fatty acids bound together. Proteins differ from each other in the kind of these amino acids which they contain. These are very numerous in each molecule, so that Osborne calculates the molecular weight of protein at 15,000 or some higher multiple of this.

"Rubner has classified food protein into three divisions representing three varieties of physiological use. The first is the "wear and tear" quota or the amount necessary to balance the normal waste of tissue protein. The second is the "growth" quota, or that necessary for the growth of the body. The third is the "dynamic" quota or that which is used merely to maintain the energy of the cells and whose function may be replaced by carbohydrate or by fat.

"Modern knowledge indicates that the amino acid nitrogen not used for growth is split from its combination in the form of ammonia, and this ammonia, uniting with carbon dioxid, is carried as ammonium carbonate to the liver and there synthesized to urea. After the amino acid has lost its nitrogen, the resulting organic acids are in part converted into dextrose and in part act like fat in metabolism.

"Dr Ringer and I have recently taken up the subject of sugar production from amino acids. We have given various such acids to diabetic dogs. We have given glycocoll, alanin, aspartic acid, glutamic acid, containing respectively two, three, four and five carbon atoms. It was found that all the carbon of glycocoll and all that of alanin was converted into dextrose, whereas three of the carbon atoms contained in aspartic and glutamic acid were so converted.

"A calculation shows that the four acids above named make up 36% of meat protein, and that these 36 parts yield 26 parts of dextrose. Since protein in metabolism may yield 58 parts of sugar, it is evident that 45% of the total sugar production from protein may arise from glycocoll, alanin, aspartic acid and glutamic acid.

"Leucin yields no dextrose but probably yields beta oxybutyric acid. Tyrosin yields no dextrose but may yield beta oxybutyric acid. The work of Neubauer shows how tyrosin is converted into homogentisic acid through a quinol stage. The alcaptonuric patient cannot oxidize homogentisic acid which is eliminated in his urine. He cannot break the benzol ring. Molecules of protein form the anatomy of protoplasm. Their wear and tear, and the fate of their integral parts both normally and pathologically are in the highest degree significant and instructive."

ACADEMY MEETING.

The seventy-sixth regular meeting was held at the Cleveland Medical Library Friday, May 27, 1910, the President, C. B. Parker, in the chair.

The program was as follows:

Congenital Stenosis of the Pylorus. A Study of the Effect of Gastroenterostomy upon Digestion and upon the Pyloric Tumor, Chas. L. Scudder, Boston, Mass.

The salient points in connection with pyloric stenosis were stated briefly and a series of cases was reported. This material had been used for metabolism experimentation. The object of the experiments was to determine the effect of a posterior gastro-enterostomy upon digestion.

The metabolism experiments conducted by Dr Talbot were reported in detail and tended to show that the operation of posterior gastroenterostomy did not impair digestion or absorption of fat and proteins.

The last part of the paper had to do with certain considerations upon the future of the pyloric tumor. Contributing to a knowledge of the future of the pyloric tumor, radiographs were shown of the stomachs of babies who had had a posterior gastro-enterostomy done for pyloric obstruction. The evidence seemed to point to a persistence, in certain cases, of the pyloric tumor.

F. E. Bunts said that the results of these metabolism experiments were extremely interesting but with this aspect of the question he had had little experience, the condition of the child after such an operation was convincing proof of the satisfactory condition of the metabolism. He wondered whether the difference of opinion between certain medical men and surgeons as to the advisability of operation in these children did not possibly mean that there were two groups of cases, one being strictly congenital and the other being acquired and due possibly to some faulty feeding which, in turn, led to pyloric spasm and hypertrophy simulating the congenital form but still amenable to non-operative treatment. If these two conditions did really exist a differential diagnosis might be extremely difficult. In four cases upon which he had operated, all had had a hard, palpable tumor, almost cartilaginous in consistency and plainly visible at the time of operation.

J. P. Sawyer said it was extremely interesting to see how these children, even when in very reduced condition, became thoroughly healthy and how digestion became normal after these operative procedures. Physiologically it seemed strange that such a marked alteration of the anatomic arrangement of the digestive tract could still be accompanied by apparently normal digestion. He had noted in one case a striking alteration in the urine. At night when the child was lying down the urine was intensely ammoniacal, although during the day it was apparently normal. He could not explain this phenomenon and wished to ask if it had been noted in other cases.

J. J. Thomas said that one of the cases operated upon by F. E. Bunts had some months subsequently an attack of summer diarrhea with complete recovery and still later an attack of pneumonia which promptly responded to appropriate treatment.

E. F. Cushing said that in one such case he had noted considerable difficulty with the digestion of fats for some time after operation although subsequently this had disappeared. He wished to know whether this was a common occurrence after such a procedure. He also inquired whether regurgitation of bile was at all common in the early weeks after operation and whether the rather persistent vomiting for a week after the operation was due to such regurgitation.

G. W. Crile asked as to the immediate results of the operation. In one of his own cases there was persistent vomiting and interference with the absorption of fat for some time following the operation. In this case the technic and the clamps advised by the speaker had been used. The patient was in extremely poor condition at the time of the operation and transfusion had been employed. He wished to know what measures were employed by the speaker to deal with the regurgitation of bile.

C. E. Briggs referred to the case of a child born healthy and well for one week. During the following three weeks, until gastro-enterostomy was performed, the child vomited very frequently, there was marked gastric peristalsis visible and the stools consisted of mucus and bile only. At operation the pylorus was fibrous and firm and as large as a man's thumb. For some time the baby did well; the vomiting ceased and water could be taken by mouth immediately after the operation. Five days after the operation milk curds were noted in the stools. Two weeks after the operation regurgitation of bile commenced, fat digestion was impaired, and there was considerable vomiting. Lavage was helpful for a time but soon lost its effect. For a time alternating feeding by mouth and by a tube seemed beneficial but later vomiting occurred with either method. One month after the operation an enteritis developed and bile was present in the vomitus as well as in the stools. Death occurred two months after the operation, there was no autopsy.

CLINICAL AND PATHOLOGICAL SECTION.

The seventieth regular meeting was held at the Cleveland Medical Library Friday, June 3, 1910, J. S. Tierney in the chair.

R. K. Updegraff reported a case of abscess of the lumbar region associated with profuse yellowish purulent expectoration, in which the communication of the abscess cavity with the air passages was proved by the injection of methylene blue solution into the lumbar sinus: within a few minutes the expectoration was distinctly blue. Injection of a similar solution into a hydrothorax and into an empyema did not affect the sputum. An x-ray picture taken after an injection of bismuth paste into the abscess failed to show the communication with the lung.

The program was as follows:

1. A Clinical Report of a Technic for Operation on the Urinary Bladder, Wm. E. Lower. (To appear in full in the Journal.)

F. C. Herrick asked whether any attempt were made to sterilize the edges of the bladder incision with carbolic acid or by heat before suturing.

G. W. Crile said he had tried this method of closure with very satisfactory results, convalescence was considerably shortened when the bladder was closed instead of being drained. On two occasions he had had to remove vesical calculi which had formed upon silk sutures used about six months previously in closing the bladder. Unabsorbable sutures, even if they did not penetrate the mucosa at the time of the operation, usually worked through into the interior of the bladder.

W. E. Lower, in conclusion, said that he used nothing to sterilize the incision but boric acid or salt solution. After closing the bladder the cavity was irrigated through the urethra every few hours for a day or so.

2. Albuminuria of Adolescence, Report of a Case, W. C. Stoner. (Appearing in full on page 529.)

J. Phillips said that in the last three years he had seen 12 cases of this condition, all were pale, anemic and showed some vasomotor disturbances. Some years ago it had been pointed out that calcium oxalate crystals were often found in the urine from such patients but recent writers had made no mention of this fact: he had found these crystals present in every case when albumin was present, but in some of these when the albumin was temporarily absent, as in the urine passed first thing in the morning, the calcium oxalate would be missing. Not only the morning urine should be examined but that passed in the evening as well. Calcium lactate had proved useful in his cases, in none of which had red blood cells been found in the urine.

W. O. Osborn said he was interested in the symptoms of faintness reported by the speaker. It reminded him of some cases seen in the Hamburger clinic at The Polyclinic in Vienna, Jehlke of the Escherich Clinic having reported cases of sudden fainting in school children after standing for some time. In such cases often a temporary albuminuria was found. The factor according to Jehlke was the position of the renal vessels with reference to the anterior curve of the lumbar spine, at the age of 8 to 12 the vessels being opposite the apex of the curve. Hamburger was accustomed to have suspected patients, with a previously albumin-free urine, kneel upright against a wall, thus accentuating the natural lordosis. A half hour in this position would often suffice to yield a distinct amount of albumin in the urine. A boy of 12 seen recently was reported as being quite fatigued, even exhausted after his morning in school. Examination was negative except for the urine. A four or five hours' accumulation in the bladder taken just after the examination was albumin-free. The kneeling posture then for 40 minutes yielded a urine with a distinct amount of albumin but no cell elements or casts. It was quite possible such a case might illustrate the vasomotor cause more frequently assigned. The kneeling posture for such a length of time might easily cause much vasomotor disturbance.

W. G. Stern said that in the recent orthopedic literature cases of spinal curvature (scoliosis) had frequently been reported in which albuminuria, without casts or formed microscopic sediment, occurred, the so-called orthostatic albuminuria. It was believed by some to be due to tension upon the renal vessels or from displacement or pull upon the kidney on the side of the lumbar convexity. In four cases of spinal curvature in which he found such an orthostatic albuminuria, the albumin came from only one kidney in each of two cases; in one case upon the side upon which the convexity of the lumbar curve appeared and in the other from the side of the concavity of the lumbar curve. He thought there must be some other cause for the albuminuria than that described by W. O. Osborn, since in many cases of spinal deformity treated by overextension of the spine (forced lordosis) no albuminuria occurred if there were none before beginning the treatment. In his four cases of scoliosis showing orthostatic albuminuria daily examination of the urine, for some time after the deformity had been overcorrected and held in the overcorrected position by means of a plaster cast, showed no difference in the amount of albumin.

R. K. Updegraff asked whether there was anything sufficiently characteristic in the condition to warrant such a title if the same symptoms and clinical findings, i. e., cyclic and postural, might exist at any period of life. He fully agreed that in all cases the 24 hours' urine should be examined. The existence of an hypertrophied heart, together with the secretion of a large amount of urine in the case just reported was a little suggestive of chronic nephritis. The very marked enlargement of the right heart in this case would also make one suspect passive congestion of the kidneys, though of course with this condition there would be a diminished output of urine.

W. C. Stoner, in conclusion, said that he had found no calcium oxalate crystals in his case until after the administration of calcium salts to correct the lessened coagulability of the blood. He had classified his case under this head because he could find no definite cause for the albuminuria and after the most careful treatment there was no diminution in the albumin whereas the albuminuria due to other causes almost always lessened under careful dieting with rest in bed. Examination of the 24 hours' urine was most important: he had seen nephritics who passed normal urine in the morning while the evening urine would show considerable albumin.

3. The Tonsils as Sources of Infection, Thos. A. Burke, M. D. (Appearing in full on page 534.)

D. S. Hanson believed that the danger of absorption from the faucial tonsils had been exaggerated. He had frequently noted in diphtheria that so long as the membrane was limited to the tonsils the systemic symptoms would be mild and the cervical glandular involvement slight, but that these evidences of absorption became marked when the membrane extended to parts beyond the tonsils where absorption more readily occurred. This did not necessarily prove that other bacteria would not be actively taken up by the faucial tonsil, but certainly gave some foundation for such a conclusion.

W. B. Chamberlin said that in every patient with tuberculous cervical adenitis the tonsils should be carefully examined as they were often coincidentally involved: Woods, in particular, had recently drawn attention to this point. The mere size of the tonsil, aside from being an obstruction to breathing, was no indication for its removal; a small, imbedded tonsil adherent to the pillars of the fauces was often more dangerous than one projecting far out toward the middle line.

W. O. Osborn said that the statement that the tonsil was a vestigial organ seemed disproved by its being most highly developed in man, and, he understood from the observations of a physician in South Carolina, more in the white man than in the negro. He thought that tonsillectomy was too frequently performed. The tonsils represented the first line of defense and if but moderately enlarged, with no history of repeated tonsillitis and no involvement of the cervical glands, they should be left alone. If, however, they were frequently inflamed or if the cervical glands were enlarged, the tonsils should be removed.

F. C. Herrick said that tonsillectomy was far more often performed now than a few years ago. At Charity Hospital Dispensary, where, on the average, 10 tonsillectomies a week were done, and where the patients or their relatives frequently returned for other ailments, he had many children with abscess of the neck, due either to tonsillar or dental infection, but he had seen no cervical abscess after the tonsils had been removed if the teeth, ears and scalp were sound.

R. K. Updegraff said that practically all infectious diseases, except those of very early life, could be shown to have followed, at a greater or less interval, an inflammation of the tonsils; because anyone who had never had such an inflammation was a medical curiosity and if the tonsils were always to be removed after an attack of tonsillitis practically everyone would require such an operation. The throat specialists were the men to decide the relative merits of tonsillectomy and tonsillotomy. The objection had been raised that tonsillitis might recur after the simpler tonsillotomy but this happened in only 10% of the cases so that in reality the results could be considered satisfactory.

W. C. Stoner said he had been greatly impressed with the success they had had at the Johns Hopkins Hospital in removing the tonsils in cases of rheumatism. He had seen many patients there in whom the rheumatic symptoms promptly disappeared when the tonsils were excised.

T. A. Burke, in conclusion, said he had purposely omitted all reference to the mechanical effects of enlarged tonsils upon the breathing. He agreed that a small tonsil was often diseased and by making pressure upon it with the finger tip caseous material could often be squeezed from its crypts. He believed that Barker's results at Johns Hopkins had satisfactorily demonstrated the advisability of removing the tonsils in rheumatism; Osler had also pointed out the value of such a procedure.

Book Reviews.

The Diseases of Infancy and Childhood. Designed for the use of students and practitioners of medicine. By Henry Koplik, M. D., Attending Physician to the Mt. Sinai Hospital, New York; ex-President of the American Pediatric Society. New (third) edition, enlarged and thoroughly revised. Octavo, 944 pages, with 204 engravings and 39 plates in colors and monochrome. Cloth, $5.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

This third edition of Koplik's textbook of children's diseases is worthy of its predecessors which have been so well and favorably known. Much has been added to former editions and many chapters expanded and rewritten. The outlook of the book is broad and the various views of different cities and countries are presented with fairness and sympathy, a condition of comparative infrequency in pediatric literature. The book may be recommended to the student as a clear, concise rendering of the subject of pediatrics. It is not at all exhaustive, nor does it aim to be. Surely there is an overproduction of these works at present, but when a book is worthy it is a pleasure to recommend it, despite the addition to superfluity. H. H.

Education in Sexual Physiology and Hygiene. A Physician's Message. By Philip Zenner, Professor of Neurology in the Medical Department of the University of Cincinnati. The Robert Clarke Co., Cincinnati. 1910.

This litttle work is intended to bring briefly before the laity certain facts of sexual physiology and hygiene, a knowledge of which is usually lacking. The author believes that these facts should be made known to the young of both sexes so that they may avoid the many pitfalls into which, in their ignorance, they might otherwise stumble. That such instruction is necessary is apparent to all. The exact method by which it shall be conveyed and the proper person to give such instructions are disputed points. The parents, no doubt, could best perform this office if they had the necessary knowledge; but many parents try to avoid this duty, often with disastrous results to their children. Physicians, male or female, can perhaps most clearly explain these points and the first part of this work consists of talks given by the author to school children and college students. The subject is dealt with in a very general and rather superficial way, but the information is so expressed that there could be no hesitation in placing the book in the hands of any young person. W. H. W.

Hygiene and Morality. A manual for nurses and others, giving an outline of the medical, social, and legal aspects of the venereal diseases. By Lavinia L. Dock, R. N., Graduate of Bellevue Hospital Training School; Resident Member of the Nurses' Settlement, New York; Secretary of the International Council of Nurses. G. P. Putnam's Sons. New York and London. 1910. Price, $1.25 net.

The author has divided this book into three parts: Part I, in which she gives an historical outline of venereal diseases—causes, symptoms and course, with general results of experiments and statistical estimates. Part II deals with prostitution. Here, again, she gives a history of the attempts made for the control and regulation of prostitution. The first formal declaration of the revolt of women against this dread practise was made in 1870. In Brussels were held the first and second International Conferences, in 1899 and 1902. Part III considers the prevention of venereal disease. That knowledge is the first essential in this campaign, is clearly shown.

The book is written plainly and forcefully, and demonstrates a great social wrong, a startling menace to public health, and a tremendous national responsibility for our women and children. H. L. L.

Acknowledgments.

The Health of the City. By Hollis Godfrey, Author of "An Elementary Chemistry," etc. Houghton, Mifflin Co., Boston and New York.

Index of Symptoms. By Ralph W. Leftwich, M. D. Fourth edition. William Wood & Co., New York. Price, net $2.25.

The New Psychology. Its Basic Principles and Practical Formulas. By A. A. Lindsay, M. D. Eugene and Arthur Lindsay, Publishers, Portland, Oregon.

The Pathology of the Living and Other Essays. By B. G. A. Moynihan, M. S. (London), F. R. C. S., Honorary Surgeon to Leeds General Infirmary; Professor of Clinical Surgery at the University of Leeds, England. 12mo of 260 pages. Philadelphia and London. W. B. Saunders Company, 1910. Cloth, $2.00 net.

Medical Electricity and Roentgen Rays. By Sinclair Tousey, A. M., M. D., Consulting Surgeon to St. Bartholomew's Clinic, New York City. Octavo of 1116 pages, with 750 illustrations, 16 in colors. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $7.00 net; half-morocco, $8.50 net.

Prescription Writing and Formulary. By John M. Swan, M. D., Associate Professor of Clinical Medicine, Medico-Chirurgical College of Philadelphia. 32mo of 185 pages. Philadelphia and London: W. B. Saunders Company, 1910. Flexible leather, $1.25 net.

A Textbook of Pathology. By Joseph McFarland, M. D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College of Philadelphia, Second edition, octavo of 856 pages, with 437 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $5.00 net; half morocco, $6.50 net.

Diseases of the Eye. By George E. deSchweinitz, M. D., Professor of Ophthalmology in the University of Pennsylvania. Sixth revised edition, octavo of 945 pages, 351 text illustrations, and 7 lithographic plates. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $5.00 net; half morocco, $6.50 net.

Transactions of the Luzerne County Medical Society for the year ending December 31 1909. Volume XVII.

Publication No. 1, issued by the Medical Faculty, Queen's University.

Reports of the Census Office. Mortality Statistics 1908. Department of Commerce and Labor.

Public Health Reports. Vol. 25, No. 23.

Reprints by: Robert Emmet Coughlin, Brooklyn, N. Y., C. A. Herter, N. Y., Gustavus Werber, Washington, D. C., Myron Metzenbaum, Cleveland, O., Charles H. Goodrich, Brooklyn, N. Y.

Correspondence.

Cleveland, June 17, 1910.

To the Editor of The Cleveland Medical Journal:

In the last number of The Cleveland Medical Journal, in an article entitled, Tuberculin in the Diagnosis and Treatment of Surgical Tuberculosis, I made the statement that I had no autopsy records to prove the contention of the first part of my paper. I therefore wish to put on record the report of an autopsy held a few days ago upon a patient in whom we used tuberculin in making the diagnosis. I am indebted to Dr C. Thomas, Warren, Ohio, for the privilege of seeing the case, and for the specimen of the abdominal glands as well as the autopsy report. In giving the history, the facts will appear as they were evident to the attending and consulting physicians.

M. G., aged three, fell while at play and immediately afterwards was unable to use her right arm. I first saw her in January, 1910, a few days after the injury took place, diagnosed a forward dislocation of the right shoulder, and was able to reduce it under chloroform anesthesia. The shoulder went in with the characteristic "pop." The advice was given to fix the shoulder for one week and to follow this with massage and gymnastics. The pain which the child previously complained of disappeared, but free motion never returned to the shoulder. I saw the child again two months later, but this time the shoulder was swollen and ankylosed, but not very painful. At this time a tuberculous family history or exposure to tuberculosis was denied. A short while thereafter, the child developed pain and rigidity of the right hip and knee, which were placed in a plaster cast for protection. In May, when I next saw her, the hip and knee were flexed at a right angle and firmly ankylosed, but there was little pain. I made a von Pirquet skin test, which proved positive within 24 hours. She had been living in the country in a tent for several months previously. In the middle of May the father, being very anxious to try how much motion there was in the hip, had her make an unusually violent effort in moving it, whereupon something seemed to give way, after which she suffered most severely from pain in the hip and limb. She went from bad to worse, and died the first week in June of tuberculous meningitis. Late in the course of her sickness it was learned that the house, the room and even the very bed the child had been accustomed to sleep in, had been previously occupied by a consumptive. The autopsy revealed tuberculosis of the meninges, bronchial and mesenteric lymph glands, the apex of the right lung and joints.

Walter G. Stern.

News Notes.

G. R. Feil, Denver, Col., has been visiting in Cleveland recently.

H. H. Drysdale and Chas. H. Clark, of Cleveland are visiting the psychiatrical clinics of France, Italy and England.

The sixty-seventh commencement of Western Reserve University was held on Thursday, June 16. The address was delivered by Dr Andrew Sloan Draper. The following received the degree of doctor of medicine: Harry L. Bard, A. B.; Winfred V. Blythe, A. B.; John Alvin Bolton, B. S.; Charles Alexander Broaddus, A. B.; Carl Judd Case, A. B.; Harrison A. Coleman, A. B., A. M.; Howard H. Davis; William Francis Demuth; Giordano B. Fliedner, A. B.; Samuel M. Glenn, A. B.; Paul F. Hasse, A. B.; Edward Kempf, A. B.; Joseph B. Kollar, A. B.; Walter W.

McKay, A. B.; Stephen J. Metzger, A. B.; Paul G. Moore, A. B., A. M.; Harry H. Myers, James T. Norton, Erwin A. Peterson, B. L., A. M.; Harold O. Ruh, A. B.; Ralph T. Shipley, A. B.

The following appointments to the teaching staff of W. R. U. Medical Department have been announced: Joseph F. Hobson, M. D., to be clinical professor of surgery; Roger G. Perkins, A. B., M. D., to be professor of hygiene and preventive medicine; John M. Ingersoll, A. M., M. D., to be associate professor of otology, rhinology and laryngology; John N. Lenker, M. D., to be associate clinical professor of otology, rhinology and laryngology; John B. McGee, M. D., associate professor of therapeutics; Charles B. Parker, A. B., M. D., M. R. C. S., to be associate clinical professor of surgery; Roland E. Skeel, M. D., to be associate clinical professor of gynecology; John G. Spenzer, M. D., Ph. D., F. C. S., to be associate professor of legal chemistry; Henry A. Becker, M. D., to be assistant clinical professor of surgery; Charles E. Briggs, A. M., M. D., to be assistant professor of surgery; Edward P. Carter, M. D., to be assistant clinical professor of medicine; Louis W. Ladd, A. B., M. D., to be assistant professor of clinical microscopy; Milton J. Lichty, Ph. B., M. D., to be assistant clinical professor of medicine; Robert G. Schnee, M. D., to be assistant professor of bacteriology and pathology; Oscar T. Schultz, A. B., M. D., to be assistant professor of pathology; Arthur J. Skeel, M. D., to be assistant clinical professor of obstetrics; Maurice D. Stepp, M. D., to be assistant clinical professor of surgery; Harrison G. Wagner, M. D., to be assistant professor of physical diagnosis; William E. Bruner, A. M., M. D., to be lecturer on ophthalmology; Charles H. Clark, M. D., to be lecturer on mental diseases; John F. Davidson, M. D., to be lecturer on anatomy; Henry J. Gerstenberger, M. D., lecturer on diseases of infancy; Benjamin F. Hambleton, B. S., M. D. to be lecturer on physiology; Harry B. Kurtz M. D., to be lecturer on dermatology; David Marine, A. M., M. D., to be lecturer on experimental medicine; Charles W. Stone, A. B., M. D., to be lecturer on nervous diseases; Clyde L. Cummer, Ph. B., M. D., to be instructor in clinical microscopy; Edward Lauder, M D., to be instructor in ophthalmology; Charles C. Stuart, M. D., to be instructor in ophthalmology; Ralph K. Updegraff, M. D., to be instructor in physical diagnosis; George B. Farnsworth, A. B., M. D., to be demonstrator of obstetrics; Homer J. Hartzell, A. M., M. D., to be demonstrator of pharmacology and chemistry; Carl H. Lenhart, A. B., M. D., to be demonstrator of physiology; Edward P. Monaghan, M. D., to be demonstrator of anatomy.

The Alumni of the Medical Department of Western Reserve University held their annual meeting at the medical college on Wednesday, June 15. The meeting was followed by a dinner which was very well attended.

Frank Jacobi, formerly located at 913 Madison Avenue, Toledo, has moved his office to the Colton Building in that city.

W. C. Chapman, one of Toledo's best beloved and most respected physicians, died at the family residence in Toledo the afternoon of May 30, at the age of 69, from nephritis.

The Toledo Hospital Training School for Nurses graduated a class of 15, June 1, the following being the graduates: S. A. McFarland, R. O. Williams, L. B. Campau, H. B. Grover, C. A. Curtis, A. K. Walsh, C. B. Shepard, G. M. Corson, H. H. Kitzman, F. E. Diehl, A. B. Bradley, H. E. Patton, L. B. Dix, D. Snell and G. I. Lewis

The St. Vincent's Hospital Training School for Nurses, of Toledo, held its commencement exercises, June 1, the following receiving diplomas: L. A. Vogelsang, E. B. Evans, M. J. Horka, M. V. Stock, M. C. Shipman, M. E. Shipman, G. H. Fields, V. Campbell and S. M. Kienast.

W. G. Gardiner, aged 59, died from pneumonia at his home in Toledo, the first week in June.

The Maternity Hospital of Toledo, held its twenty-sixth annual meeting early in June, electing the following medical board: W. W.

Brand, C. F. Tenney, George Todd, and W. H. Snyder, of which W. W. Brand is the chief-of-staff. The following is the report for the year ending June 1: Adults, 88, number of days care, 3,149; infants, 115, number of days care, 4,116; births 57; adoptions 77, of this number 19 were brought in for adoption; deaths, 13, of this number four were still born; Catholics, 62; Protestants, 141.

James Lasalle, Toledo, has returned from an extended trip abroad.

Toledo sent a large contingent to the meeting of the American Medical Association at St. Louis. Incidentally Toledo is elevating her standard as a medical center.

The School Board of Toledo, has appointed Gertrude Shreve school nurse at $65.00 a month, to assist Bruce Brockway, school physician in District No. 11, Toledo.

Toledo and vicinity has had a smallpox scare.

Meetings of the Academy of Medicine of Toledo and Lucas County:

The Section on Surgery met Friday, May 27. The program was as follows: 1. Sprains of the Spine, C. D. Selby; discussion opened by Dale Wilson. 2. Hemostasis, A. H. Schade; discussion opened by G. P. Hohly.

The Medical Section met Friday, June 17. The program was as follows: Diseases of the Stomach and their Relation to other Diseases, George H. Jones; discussion opened by N. N. Sallume.

The General Meeting was held on Friday, June 3. The program consisted of the following symposium on gonorrhea: 1. Microscopical Findings, Murray B. McGonigle. 2. Pathology, John P. Gardiner. 3. Treatment of the Acute Stage, Robert S. Walker. 4. Treatment of the Chronic Stage, Charles M. Harpster.

Defiance County, through the activity of its local medical society, has decided independently to build a tuberculosis hospital. Lucas County will eventually follow the example of Defiance—eventually is a term used advisedly, depending upon political conditions.

The Staff of the Elyria Memorial Hospital held the regular monthly meeting at the hospital June 20. The program was as follows: 1. Notes on Study at the State Laboratory, H. M. Metcalf. 2. Report of Cases, W. E. Hart.

The Lorain County Medical Society met in Elyria June 14. S. S. Cox, A. J. McNamara and S. V. Binley led a discussion upon the Ohio State Medical Association Annual Meeting and upon State Legislation.

The Muskingum Co. Medical Society met June 8. The following program was presented. 1. Harelip and other Facial Deformities, W. A. Melick. 2. Erysipelas, J. Z. Heston. O. A. Wiseman as a member of the Legislation Committee, reported enthusiastic replies from the local Representative and Senator, in regard to the establishment of a Department of Health with a Secretary of Health as a member of the President's cabinet.

F. S. Baron, Zanesville, left June 20 for a three months' visit among the nose, ear and throat clinics of Europe. He will spend some time in Oxford, London and various cities of Germany.

Maj. J. H. Wright, New Lexington, and Lieut. J. R. McDowell, Zanesville, medical officers of the Seventh Infantry O. N. G., attended the medical school, held in Columbus, June 7 and 8, for all the medical officers of the O. N. G.

W. E. Loughridge, Mansfield, President of the Richland Co. Medical Society, recently underwent an operation at St. Luke's Hospital, Cleveland, made necessary by a fall during the past winter.

J. L. Stevens and wife, Mansfield, sailed for Naples early in June to be gone three months. During his absence his practise will be in charge of H. Woltman.

The Physicians of Mansfield have presented the Emergency Hospital with a new Mayo operating table.

S. C. Hotchkiss, Asst. Surgeon, U. S. Public Health and Marine Hospital Service, has been assigned to the Revenue Cutter "Bear" and will spend six months in a cruise in the North Pacific and Arctic Oceans. His mail address will be care of U. S. Rev. Cutter "Bear," Nome, Alaska.

The Erie County Medical Society met at Sandusky, June 22, 1910. The following program was presented: 1. Empyema, Charles Graefe. 2. Organic Diseases of the Heart, M. J. Love.

Augustus J. Gawne of Sandusky died, aged 67, at the Good Samaritan Hospital June 1, 1910, from chronic interstitial nephritis. He graduated from Charity Hospital Medical College, Cleveland, in 1869, and after practising in Cleveland for a short time went to New York and took special work under Dr Sayer. He then located in Sandusky and for a long time was one of the leading practitioners there. He retired from practise about 12 years ago to give his entire time to the manufacture and sale of an electrotherapeutic apparatus of which he was the inventor.

The Twelfth Annual Conference of the American Hospital Association will be held at the Planters' Hotel, St. Louis, Mo., September 20, 21, 22 and 23, 1910. A preliminary program has been issued which is of unusual interest, dealing with many different aspects of hospital work and administration.

Walter C. Brinkerhoff, who has been in the government service making a study of leprosy in the Molokai leper settlement in the Hawaiian Islands, will return to this country at an early date. After spending the summer in Germany he will enter upon his new duties as Assistant Professor of Pathology at Harvard.

Sir Francis Seymour Haden, who died recently in Bradford, England, at the age of 93, was not only a busy and eminent surgeon but was one of the master painter-etchers of the nineteenth century and was also a writer of the first rank. To his efforts was largely due the revival of the almost forgotten art of painter-etching, which, perhaps largely owing to Ruskin's reference to it as "a blundering art," failed for a time to be appreciated in England. He was married to a half sister of the famous American artist, James McNeil Whistler, who lived with the Hadens for some time after he went to England.

The Henry Phipps Institute for the Study, Prevention and Treatment of Tuberculosis: Mr. Henry Phipps of New York has selected the University of Pennsylvania to carry on the work of the Phipps Institute. Ground has already been acquired in Philadelphia on which will be erected a hospital for this purpose. The extent of the benefaction exceeds $5,000,000.

The work will be divided into three general departments, each of which will be presided over by a director. For the Directorship of the Laboratory, Dr Paul Lewis now of the Rockefeller Institute has been selected. For Directorship of the Sociological Department, Mr. Alexander M. Wilson, of the Boston Association for the Relief and Control of Tuberculosis. Dr H. R. M. Landis has accepted the appointment as Director of the Clinical Department. In addition to a board of eight directors who will be directly responsible to the Trustees of the University, an Advisory Council has been created and will meet annually at the Institute.

Deaths.

William G. Gardiner, Toledo, Ohio, died May 18, aged 59.
William C. Chapman, Cincinnati, Ohio, died May 30, aged 69.
O. A. Lyon, Akron, Ohio, died June 17, aged 56.
H. L. Bonner, Marion Ohio, died June 10, aged 69.
Frank T. Lindsay, Xenia, Ohio, died June 2, aged 54.
Edgar Martin, Norwalk, Ohio, died June 8, aged 84.
James A. Dixon, Bellaire, Ohio, died June 10, aged 53.

The Cleveland
Medical Journal

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A Study of So-Called "Spontaneous" Gangrene

By RICHARD DEXTER, M. D., Assistant Physician to the Lakeside Hospital Medical Dispensary, and ARTHUR W. M. ELLIS, M. B. (Tor.), Resident Pathologist Lakeside Hospital.

(From the Pathological Laboratory of Lakeside Hospital, Cleveland.)

The condition known as spontaneous gangrene, that is, gangrene non-traumatic and non-infectious occurring in healthy men in the prime of life, has been the subject of much discussion by numerous observers during the last 30 years. The unusual character of the case, on which the present study is based, has seemed to us to justify a further contribution to a subject, perhaps, already overstocked. In attempting this, we have confined ourselves to cases in which gangrene was present, realizing full well that this is merely one of the numerous manifestations of obliterative disease of the vessels of the extremities, and that many, if not all, cases of intermittent claudication, erythromelalgia, and possibly Raynaud's disease fall into the same class.

The history of the study of spontaneous gangrene dates from the year 1876, when Friedländer[26] made the first careful observations on the pathology of the vessels in this condition. He considered it to be due to an obliterating endarteritis secondary to an inflammation about the small and medium sized arteries. In 1879 von Winiwarter[62], after a careful study of one case, came to the conclusion that the condition was a disease of the vessel wall taking the form of a primary obliterative endarteritis. Following these observers, Thoma[59], Zoege von Manteuffel[71], and his pupil Weiss[65], advanced the view that the condition was due to thrombosis with subsequent organization. This opinion has steadily gained ground, until in 1908, Buerger[10] proved, fairly conclusively, the thrombotic nature of the process.

The history of a typical case of spontaneous gangrene is that of intermittent claudication in which gangrene supervenes. The patient, a male, often a Russian Jew, in the prime of life, of good antecedents, and habits, and free from syphilis, complains first of pain in the feet extending up the calves of the legs. With this pain, or preceding it, may be sensations of numbness, tingling, heat, cold, or heaviness. The pain is sharp, and appears only after exertion. Accompanying it may be a dull constant ache, resembling closely the ache of flatfoot, which moreover is often present. A period of disability extending over months or years follows, till finally the patient cannot walk more than a few hundred yards. On starting out he is free from pain, but after a few steps the pain appears, and increases until further progress becomes impossible. After resting a few moments he can again proceed. Occasionally the pain becomes constant and agonizing, and the patient can get no rest. On the other hand, the process is capable of remission, which may lead to complete cessation of symptoms.

On examination of such a case in the early stages, the affected parts are cold to the touch, pale, or in the dependent position, cyanotic, and occasionally cherry red. This is the stage resembling erythromelalgia. The superficial veins show passive congestion, and when emptied by pressure, refill very slowly. Recurring attacks, resembling phlebitis of these veins due to migratory thrombosis are not uncommon. Edema is rare. The arteries of the foot and leg are always affected. Early there may be a faintly palpable pulse, but as the process advances this disappears.

The dorsalis pedis and posterior tibial are usually the first vessels affected, but in advanced cases, all the arteries of the foot, leg and thigh, including the femoral, may be pulseless. The late stage of the condition is marked by the onset of gangrene, beginning, usually, under the nail or on the tip of the great toe. This, starting as a serous or purulent bleb, slowly goes on to the formation of an indolent ulcer and subsequently to dry gangrene, which may involve all the toes and extend on to the dorsum of the foot. The march of the gangrene is slow, and the line of demarcation almost never sharply defined, the gangrene fading gently into the surrounding engorged cyanotic skin. The reflexes may be increased or diminished depending on the amount of involvement of the nerves accompanying the affected vessels. Disturbances of sensation have occasionally been observed. While the process, at the start, is usually unilateral, sooner or later the other leg is almost always involved.

We have reviewed the literature of the subject, as far as we have been able to obtain it, and have found 73 cases, which we consider undoubted examples of spontaneous gangrene. We have excluded five cases, reported as spontaneous gangrene, occurring in the arms alone, in which the history, together with the presence of cervical rib or some other definite etiologic factor, showed clearly that they did not belong to this group. These 73 cases do not represent, by any means, all those reported, as many have undoubtedly been included under intermittent claudication, the literature of which we have not attempted to review. We have analyzed these cases as regards sex, age, duration of symptoms, condition of vessels of the affected parts, condition of the urine and possible etiology. The results are contained in the following tables.

I. Sex:

Male	69
Female	4
	73

II. Age:

Under 20	2
21 to 30	7
31 to 35	9
36 to 40	22
41 to 45	12
46 to 50	10
51 to 60	10
Not mentioned	1
	73

It is interesting to note the early age at which the condition is found, 18 or one-fourth of the entire number occurring before the age of 35, while in 52 or more than two-thirds, the condition was established before 45. The period at which the disease is most common appears to be the last half of the fourth decade; 22 or nearly one-third of the whole number occurring between 36 and 40.

III. Race:

In only 17 of the 73 cases was it definitely stated that the patient was a Jew; 14 were Japanese. In seven the nationality was not specified. How many of those mentioned as English, Germans, Austrians, and so forth, were Jews it is impossible to determine. All observers have noticed the prevalence of this condition among Jews, especially Russian Jews. It is evident, however, that the disease is by no means confined to this race.

IV. Duration of symptoms:

Over 20 years	1
Over 10 years	5
6 to 10 years	8
3 to 5 years	30
1 to 2 years	15
7 months to 1 year	2
6 months and under	11
Not mentioned	1

The disease is thus essentially a chronic one.

V. Distribution of lesions:

Both legs	23
Right arm	1
Left arm	1
Right arm and right leg	1
Right arm and left leg	5
Right arm and both legs	4
Left arm and left leg	1
Left arm and both legs	1
Both arms and right leg	1
Not mentioned	5
	73

In the 68 cases, in which the location was mentioned, the condition occurred 53 times in the legs alone, twice in the arms alone, and 13 times in both upper and lower extremities. It is interesting, that in the 13 cases in which the arms were affected, in all but two the legs were also involved. It has generally been stated that the condition was prone to appear in the left foot. This would seem to be erroneous, as in the above cases the condition occurred as frequently in one leg as in the other.

The frequency of its occurrence in the arms has never before been pointed out.

VI. Condition of the vessels:

In the following table the cases are classified according to the most proximal artery in which the pulse is lessened or absent. It is to be understood that all vessels distal to the one mentioned are involved. The discrepancy in the total in this table is due to the presence of nine cases in which the condition of the vessels in both arms and legs has been recorded.

Femoral	24
Popliteal	20
Arteries of feet (dorsalis pedis and tibials)	18
Brachial	1
Radial	9
Ulnar	1
Not mentioned	9
	82

In more than one-third of the cases, the pulse in the femoral and all the vessels distal to it, was lessened or obliterated, while in nearly two-thirds the vessels as high as the popliteal were involved.

VIII. Condition of the urine:

Normal	45
Albuminuria	7
Transient glycosuria	2
Not mentioned	19
	73

In the two cases in which glycosuria occurred, it was not present at the time of examination, but had been noted on one previous occasion.

VIII. Possible etiology:

(a) Tobacco:

Moderate smokers	5
Heavy smokers	6
Enormous smokers	2
Mentioned as not excessive	6
Not mentioned	54
	73

(b) Syphilis:

Mentioned as positive	7
Mentioned as negative	39
Not mentioned	27
	73

The above figures do not indicate that syphilis or the abuse of tobacco play any part in the causation of this condition. Of the other etiologic factors, mentioned generally as probable, such as exposure to cold, and alcohol, we have found no confirmatory evidence.

From the above statistics it can be seen that this obliterative disease of the vessels resulting in gangrene of the extremities, affects usually the legs, but occasionally also the arms. The possibility of a more general distribution of the condition seems never to have been suggested. That this may occur is conceivable. Our own case, and one which we have found in the literature, seem to bear out this idea. The latter reported by L. Renon[52], in 1905, is of such interest that we have thought it worth reviewing at some length.

The patient, a male aged 58, of good habits except for excessive smoking, had suffered from intermittent claudication and violent pain in the left foot for five years. During the seven months previous to admission the symptoms had become more marked, so that the patient's feet became cold and cyanotic on walking 200 yards. Four years before, he had had a slight paresis of the left arm, and a slight left facial paralysis. He complained of palpitation of the heart, and gave a history of typical attacks of angina pectoris. The heart and lungs were negative. The pulses of both feet were feeble. The left foot was swollen, cold, and cyanotic. The urine contained a trace of albumin, and no sugar.

Gangrene of the left foot appeared two weeks after admission, and a month later the patient died with delirium and coma. At autopsy the liver weighed 1550 gms., and was hard and cirrhotic. The kidneys showed old and recent infarcts. The spleen was large, hard, and strewn with infarcts. The heart was hypertrophied, its valves absolutely normal. The aorta was filled by a completely organized intimately adherent thrombus which, starting from a point just below the origin of the renal arteries, extended downwards into the iliacs and femorals. The femoral, popliteal, tibial, and dorsal vessels of the feet were obliterated by a similar thrombus. There was a large area of old softening in front of the right optic thalamus. Microscopic examination of the vessels showed organization of the thrombus, without change of the vessel walls, beyond a slight cellular infiltration.

A case reported by Hawkins[32] occurring in a girl of 11 years, and one by Bryant and Hale White[8] in a babe of six months, both instances of thrombosis of the vessels of the legs, with widely distributed visceral lesions, showed such marked arteriosclerotic changes that they cannot be considered as belonging to the class of cases under discussion. Several other cases which at first sight appear similar to that reported by Renon, are to be found, but in each one the presence of valvular disease, or of antemortem thrombi in the heart cavities, indicate the embolic origin of the condition. The absence of such was definitely stated in the above case, which, with the absence of involvement of the vessel wall, seems to point to a primary arterial thrombosis as the cause of the process. It is interesting to note that, although during life the condition was confined to the legs, after death lesions of the liver, spleen, kidneys, and brain were found. In the absence of a focus for embolism, is it not probable that the lesions of these organs were due to a thrombotic process in their vessels similar to that in the vessels of the legs?

The following case which came under our observation in the Lakeside Hospital and which owing to the kindness of Dr E. F. Cushing, we are enabled to report, presents many points of similarity to that reported by Renon.

G. M., male, American, 23 years old, carpenter, single, had had the ordinary diseases of childhood, and typhoid fever. He had been short of breath on exertion for three or four years. Eight months ago he had a urethritis, and a soft chancre. He denied syphilis. He had been a very heavy smoker and a moderate drinker. The present illness began three years ago when the toes of his left foot became painful and got "black and blue." This condition lasted almost a month when the pain disappeared and the toes regained their normal color. Since then he has had such attacks at intervals of about a month. The toes of the left foot have recently become black and are very painful. The patient has been increasingly short of breath on exertion. Physical examination showed the toes of the left foot all discolored. The great toe was dark brown, the fourth toe was absolutely black, the others ranging in color between the two extremes. The toes were very tender and colder than those of the right foot. There was no definite line of demarcation. Fairly well marked general glandular enlargement was present.

The heart was enlarged to left and right. The right border 5 cm. to the right of the midsternal line, the sounds were clear, regular, and forcible.

The radial pulses were equal, regular, and of good volume, and compressible with difficulty. The femoral pulses were much more easily compressed than the radial. Blood pressure in the radial artery 205 mm.

of Hg. (Riva Rocci.) No pulse was palpable in the left dorsalis pedis artery.

The liver dulness extended from the sixth rib to 5 cm. below the costal margin in the midclavicular line. The edge was indistinctly felt. There was no pulsation. No change in reflexes or sensations was demonstrated. The eye grounds were not remarkable. The urine contained a heavy trace of albumin, and no casts. The leukocyte count was 27,000.

On the day after admission, the patient's temperature rose to 101° F. He became somewhat delirious, and showed signs of breaking compensation. Five days after admission, there was slight dulness with a few scattered patches of tubular breathing and a few fine moist râles at the left base behind. The temperature ranged between 101 and 103°, pulse between 100 and 120, the respirations were 30, the leukocyte count 31,000. Lumbar puncture was negative. Seven days after admission there was flatness and loud tubular breathing and increased fremitus at both bases, most marked on the left. The patient was somewhat delirious. Blood culture was negative.

Nine days after admission, the signs of consolidation still spreading and the respiration 50, the patient died.

At autopsy, the gangrene of the foot was as previously described. The heart was greatly hypertrophied and dilated, no sign of antemortem thrombi was present in any of the heart cavities. The valves were in no way remarkable. There was bloody fluid in both pleural cavities. The lungs showed massive hemorrhagic infarctions, the vessels leading to the infarcted areas filled with fresh red thrombi firmly adherent in places to the vessel wall. The liver was enlarged and pale. On the anterior aspect of the right lobe, the capsule was thickened and contracted. There was great increase of connective tissue throughout the right lobe. The spleen was much enlarged and hard. The capsule was thickened, and the connective tissue increased. Along the periphery were several old healed infarcts and throughout were numerous more recent areas of anemic infarction. The kidneys showed little gross change beyond fairly marked congestion. In the aorta at a point immediately below the origin of the renal artery was a mural thrombus 4.5 cm. in length. The thrombus completely surrounded the lumen of the aorta narrowing it to about one-half of its usual diameter, it was pinkish gray, firm, longitudinally striated, and firmly adherent to the vessel wall. On its surface were several small, fresh, red thrombi. The remainder of the aorta showed a slightly raised longitudinal, yellow streaking with occasional small, raised, white patches of intimal thickening. On the whole, however, the aorta varied little from the normal. The first portion and the arch of the aorta were free from change of any kind. Nothing resembling syphilitic aortitis was seen.

Microscopic examination:

Heart: The heart shows hypertrophy and marked fibrous myocarditis.

Lungs: The lungs show massive hemorrhagic infarction, evidently of recent origin. In many of the small veins and capillaries, which are everywhere widely dilated, can be seen what appear to be agglutination thrombi, formed of fused red blood cells. In what seems to be the beginning of this process, the staining reaction of the fused cells is unchanged, that is they stain straw colored with eosin and about the same tint as unchanged cells in the same and other vessels. These masses of fused red blood cells may fill three-fourths or four-fifths of the lumen of the vessel. In vessels so affected there may be a number of leukocytes, which rarely occur scattered, but are usually present in larger or smaller clumps. In what appears to be the next stage of the process, the lumina are completely blocked by masses of fused red blood cells containing a variable number of leukocytes. In these vessels, the plugs of fused cells stain deeply pink with eosin, either in whole or in part. This is in striking contrast to those previously described. These deeply staining masses may be smooth and glassy, but are more often granular in appearance. In some vessels of this class, that is the small veins and capillaries, fibrillated fibrin can be seen.

The larger branches of the pulmonary veins have their lumina completely plugged by solid masses, composed in large part apparently of fused red blood cells, but containing in addition rather dense strands of fibrin; in the fibrinous areas are numbers of leukocytes. In some of these pulmonary veins of medium size, typical mixed thrombi do occur. Can these be secondary thrombi, formed about emboli of agglutinated red blood cells, which have passed from the pulmonary capillaries into these veins? The blood in the alveoli surrounding the vessels plugged with agglutination thrombi shows no tendency to a similar agglutination, each cell preserving its integrity and individuality.

The small and medium sized arteries are plugged with typical mixed thrombi, in which red and white cells in varying proportion are entangled in the fibrin network. No sign of agglutination thrombi was seen in any of the arteries of the lungs. The walls of the small and medium sized arteries show nothing remarkable.

The main branch of the pulmonary artery is filled with a mixed thrombus adherent to the vessel wall at two or three points, elsewhere it has separated from the vessel by contraction; at the points where the thrombus is adherent, definite beginning organization can be made out.

The wall of this vessel shows slight degenerative changes. There is a definite proliferation of the subendothelial layer of the intima which tends to be of a somewhat nodose type, giving the lumen a slight irregularity of outline. These nodes of intimal proliferation correspond definitely to areas of connective tissue proliferation in the media. The changes in the media, however, are slight, both muscular and elastic elements being on the whole well preserved. The adventitia shows nothing remarkable.

Liver: The capsule shows in places a rather marked thickening with active cellular proliferation of connective tissue. Throughout the liver there is an increase in the perilobular connective tissue. Beneath the capsule for a distance of about two cm. this is very marked, while in the superficial two or three mm. it is intense, no trace of liver cells remaining. The new formed connective tissue is of a very cellular character. There is some new formation of bile ducts, but these are poorly differentiated.

The branches of the portal veins in this area, both large and small, are completely obliterated by a richly cellular connective tissue, evidently the result of organization of thrombi. Some of these are canalized and one or two show complete hyaline degeneration. Some of the arteries in the affected superficial part of the liver show a slight intimal proliferation, but in the majority, the intima is unchanged; nearly all, however, show hypertrophy of the middle coat, with hyaline degeneration of that layer. The walls of the bile ducts are also thickened. The rest of the liver shows evidence of marked chronic passive congestion, with fairly widespread central focal necroses. No sign of recent or agglutinative thrombi in portal vein, liver capillaries, hepatic artery, or vein were seen.

Spleen: The spleen shows numerous infarcts of varying age, but none of them of very recent origin. The oldest are completely fibrous. The remainder of the spleen shows a moderate passive congestion.

The condition of the vessels is extremly interesting. Throughout the spleen, but especially in the healthy tissue near the margins of the infarcted areas, one finds many of the sinuses filled or partly filled with deeply pink staining granular masses, exactly similar to those described in the capillaries of the lungs. This material resembles fibrin closely in appearance and staining, but yet is distinct from it. These masses show no signs of fibrillation, and are of a glassy appearance, frequently on focussing one can make out what appear to be the shadows of agglutinated red blood cells. Sometimes a sinus can be seen partly filled by such an agglutination thrombus, while the remainder contains unaltered blood cells. Several sections through one of the medium sized veins were seen, containing a typical hyaline thrombus, almost certainly an older stage of a thrombus formed by agglutinated red blood cells. In places the endothelial lining of this vessel still remains, and at one point a space between the thrombus and vessel wall, lined by endothelium and filled with unaltered red blood cells, can be made out.

The capillaries and the small arteries show nothing remarkable, but in the medium and large arteries are most extensive changes. A few of these vessels appear normal, a few show a moderate degree of intimal proliferation with hyaline degeneration of their walls. The majority, however, especially in the neighborhood of the infarcted areas, show complete obliteration of their lumina by a dense connective tissue sometimes fibrous, sometimes richly cellular. In some the obturating mass shows beginning hyaline degeneration. Practically all these obliterated vessels contain one or more blood spaces, lined by endothelium and filled with blood. The vessels obliterated by more cellular tissue show in addition to such blood spaces numerous capillaries. The middle and outer walls of the vessels show little change. Sections stained for elastic tissue show the elastic laminae of the obliterated vessels heavy and wavy, nowhere do they show fibrillation or reduplication. In the obliterative tissue, a few fine fibrils of elastic tissue arranged circularly about the vessels can sometimes be made out but these are always very minute, never numerous, and are confined to the region immediately inside the internal elastic lamina. Altogether the appearance is very definitely that of organization of thrombus and not intimal proliferation.

Kidneys: The capsule varies, where the underlying tissue is normal, the capsule is of normal thickness. Over the greater part of the sections examined, however, the underlying parenchyma shows marked increase of fibrous tissue and here the capsule is greatly thickened. In such areas the tubules have almost entirely disappeared, those that remain are compressed and atrophic. The glomeruli also show marked changes, but as compared with the tubules, they are well preserved. Most of them show a thickening of Bowman's capsule, which in some is marked, while some are entirely replaced by connective tissue. This increase in connective tissue is definitely patchy in character, the patches being sharply marked off from the intervening tissue, which shows nothing pathological except a slight cloudy swelling of the convoluted tubules. The medulla shows a general increase in connective tissue. Hyaline casts are fairly numerous.

The vessels of the kidneys show very important changes. The capillaries of the tufts show nothing remarkable, but many of the intertubular capillaries show marked proliferation of their endothelium. Many of the small arterioles also show definite intimal proliferation, which in a few cases has led to complete obliteration. It is very noticeable that the intertubular capillaries and small arterioles, which show this intimal proliferation, are found only in the areas where the fibrous tissue is increased. Where the tissue is normal, there these vessels show no change.

The medium and large arteries, however, show by far the most marked changes. Some of them are normal, but about half the vessels of this size, in the sections examined, are filled by a cellular connective tissue, pierced in places by one or more spaces lined by endothelium and containing red blood cells. These vessels show the characteristic picture of organized thrombi. In one section can be seen such an artery, which unmagnified is about the size of a match. This vessel is completely filled by dense fibrous connective tissue, pierced in three places by small vascular channels. The vessel presents a thin outer fibrous coat containing numerous nuclei, a thick middle muscular coat, and a pale bluish staining central portion, consisting of dense fibrous tissue, in which are several capillaries and the three blood spaces mentioned above. These blood spaces are lined by endothelium, and surrounded by distinct walls of pink staining more regularly arranged fibers, showing a definite circular arrangement about the spaces. These are apparently canalized channels in an old organized thrombus. One of these canalized channels is in turn almost completely obliterated by a mass of cells, which appear endothelial in type, but are free from the lining cells, except at two points. The vasa vasorum, of which there are seven grouped about the vessel, are very large and thick walled, their lumina almost completely obliterated by what looks like proliferation of the intima.

Sections of this vessel stained with Unna's orcein, show very little elastic tissue in the media, but what there is, is normal in appearance and arrangement. The internal elastic lamina is heavy, it shows well marked reduplication and in places fibrillation. No elastic fibers can be seen in the obliterating tissue, except a few extremely minute twigs situated immediately inside the internal elastic lamina. The large and medium sized arteries which are not obliterated show no thickening of their walls or other signs of arteriosclerosis. In some of the obliterated vessels, the obliterating tissue has undergone hyaline degeneration. This is very well seen in a section of one of the large arteries, in which one of the canalized channels, has in turn undergone thrombosis, with subsequent transformation of the organized thrombus into hyaline. No sign of anything resembling agglutinative thrombi was seen in the kidney.

Vessels of the foot: No examination of the vessels of the leg could be made, as the relatives refused to allow any dissection of the extremities whatsoever. In sections through the skin of the foot near the area of gangrene, a great variety of changes are seen in the vessels. The largest, an artery the size of the dorsalis pedis, has its lumen almost completely obliterated by a canalized thrombus which has undergone hyaline degeneration. All three coats of the vessel show changes. The intima and media being both moderately thickened, while the adventitia is markedly so. The vessels a little smaller than this vary, some show no change, while others show well marked hypertrophy of the media with a marked thickening of the intima, resulting in a greatly reduced lumen of irregular outline. The small arterioles also vary, some are unaltered some show partial or complete obliteration of their lumina due apparently to intimal overgrowth, while many contain thrombi which have undergone hyaline degeneration.

Aorta: Sections through the mural thrombus in the aorta, show that it is formed by a loose connective tissue, the superficial layers of which show hyaline degeneration. The thrombus is covered by endothelium, except at some points. No elastic tissue fibrils can be seen in the thrombus. This organized thrombus is from two to three times the thickness of the aortic wall. The aortic wall beneath the thrombus shows little change. Sections stained with hematoxylin and eosin, Van Giesen's picro-fuchsin stain and Unna's orcein show both muscular and elastic elements of usual appearance and arrangement, except in the outer fourth of the media. Here the ingrowth of capillaries from the adventitia has been accompanied by slight proliferation of cellular connective tissue. Sections through the aorta at other levels show an irregular thickening of the intima, corresponding to areas of degeneration in the inner third of the underlying media. This thickened intima contains very numerous, regularly arranged, new formed elastic fibrils, in marked contrast to the organized thrombus in which no trace of elastic tissue appears. The outer layers of the media show also a slight connective tissue proliferation.

The interpretation of the above findings presents some difficulties. It is unfortunate that we were unable to examine the vessels of the legs. The vessels in the skin, proximal to the gangrenous area, one of which was as large as the dorsalis pedis show, however, definite thrombosis, and it is probable that the process in the femoral and tibials was a similar one. The kidneys are extremely interesting. At first sight the narrowing of the lumina of the small arteries and capillaries would seem to point to an arteriosclerotic process. On the other hand the distribution of the areas of fibrosis and their sharp demarcation, and the fact that the vessels in the unaffected tissue show no change whatsoever, is against this view. May not these small vessels be terminal branches of the larger trunks which were seen filled with organized thrombi? Through the canalized channels in such vessels only a small amount of blood could flow, and the proliferation of the intima in these terminal branches may be simply a physiological narrowing of the lumen to compensate for this lessened flow. If such is the case, the whole process would appear to be due primarily to thrombosis of the larger arteries. The occurrence of intimal proliferation in some of the vessels of the foot can be similarly explained. In the spleen we have also thrombosis of the large and medium sized arteries leading to extensive infarction. The cirrhosis of the liver occurring both in this case and in that reported by Renon is somewhat puzzling. At first we were inclined to consider it either syphilitic or due to prolonged extreme passive congestion. The absence of gummata, however, and the occurrence of definite organized thrombi in the branches of the portal vein, in the affected area, seems to indicate that the process here is also one of thrombosis. In the pulmonary artery we have definite thrombi showing beginning organization resulting in massive hemorrhagic infarction of the lungs. It seems highly probable that this is simply the early stage of the process occurring in the liver, spleen, kidneys, legs and aorta. It is well known that all the stages of thrombosis and organization may be found in the vessels of the leg of one individual. Why may we not find, then, different stages in the various organs of one individual?

The possibility of embolism must of course be considered. That the thrombosis in the vessels of the legs may be due to an embolus from the thrombus in the aorta cannot be denied. The situation of the thrombus below the origin of the superior mesenteric and renal vessels seems, however, to exclude the probability of embolism in liver, spleen and kidneys. In the case of the pulmonary artery it is hard to imagine such an origin for an embolus. As the foramen ovale was closed, retrograde embolism is excluded. Many cases showing lesions similar in the gross to this case have been reported, but in these the presence of valvular disease or antemortem thrombi in the ventricles, both entirely absent in our case, gave a definite focus for embolism.

The significance of the occurrence of agglutination thrombi in the spleen and lungs is difficult to estimate. Their occurrence in the lungs alone, would not be of much significance for it is well known that one of the most common sites of such thrombi is in hemorrhagic infarcts. The finding however of similar thrombi in the spleen in tissue outside the areas of infarction, and of hyaline thrombi in one of the veins of that organ, suggests that their occurrence may be of more significance. In this connection the liver is also of interest.

Mallory[43] has shown that the focal necroses of the liver in typhoid fever are due to thrombi formed by and around endothelial cells. Boxmeyer[5] has shown that the focal necroses of the liver in experimental hog cholera, are due in part to similar endothelial cell thrombi, but also to agglutination thrombi in the portal veins and liver capillaries, especially the former. He has pointed out moreover that the areas of necrosis are usually about the periphery of the lobule and that it is the superficial portion of the liver which is chiefly affected. Pearce[50] and Flexner[23] have produced similar lesions by the intravenous injection of hemagglutinins.

In the case reported here, we have focal necroses of the liver of central situation. These are unquestionably entirely due to the chronic passive congestion, which is marked in this case. But in addition we have, in a patient suffering from multiple thrombosis and in whom agglutinative thrombi were found in the lungs and spleen, a marked perilobular formation of connective tissue, affecting chiefly the superficial layer of the liver. In the absence of any known cause for such a cirrhosis, may not this be simply the result of a previous extensive necrosis, due to thrombosis in the portal circulation, possibly agglutinative in origin?

The fact that in the spleen and kidneys it is the large arteries which show the most extensive change, while the small arteries appear to be only secondarily affected, is of course strongly against the probability of the whole process being agglutinative in origin.

We believe then that we are dealing here with a case of general arterial thrombosis, exactly similar to that found in the extremities in the condition known as spontaneous gangrene.

As regards the etiology of this condition, we must admit that like all previous observers, we are still completely in the dark. Syphilis, alcohol, and exposure to cold have all been tried and found wanting. In the cases studied by us, we have found no evidence of the abuse of tobacco as an etiologic factor, but recently Erb[20], from the study of a large number of cases of intermittent claudication, undoubtedly a closely allied condition, has laid stress on the importance of the abuse of tobacco in that condition.

In closing we should like to call attention to the possibility of agglutination bearing some part in the origin of this process. It is interesting to note that as long ago as 1883 von Recklinghausen[51] mentioned the possibility of such an origin. The finding of agglutinative thrombi in the spleen and lungs in the case reported here suggests that a study of the hemagglutinins in cases of spontaneous gangrene, might possibly throw some light on the nature of a process at present enshrouded in darkness.

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The Value of the Tuberculin Reaction in the Diagnosis of Tuberculous Conditions in Children.

By WILLIAM PALMER LUCAS, M. D., Assistant in Pediatrics, Harvard Medical School; Junior Visiting Physician Children's Hospital; Junior Visiting Physician Infants' Hospital, Boston.

All of us have watched a pendulum swing on its arc time after time reaching its extreme limit, but always swinging back to its center of gravity, and then out again to the other extreme, but if swung true it will always come to rest finally at its true center. Even so are the cycles that most of our finer scientific diagnostic methods pursue. Extravagant claims or denunciations are the extremes, but we may rest assured that the true center will be reached when the time of rest appears. It has been no different with the tuberculin reactions than with other diagnostic methods. The extremes have been claimed for it; articles lauding its value as a diagnostic method in all conditions of tuberculosis and at all ages have already filled volumes, but now we are hearing it denounced on all sides—there is a skepticism prevailing as to its value at any age or in any condition of tuberculosis. It is, however, no more than could be expected or, in fact, than is deserved after such voluminous applause as this method received less than three years ago.

Koch's method of subcutaneous injections of tuberculin as a means of diagnosis had for a long time either been held in discredit or had only a very limited field for application, so that when in 1907 B. Schink and von Pirquet brought out their simple method of the cutaneous tuberculin reaction, it spread like wildfire. It was simple, easy of application, took only a minute to complete a test, could be read by anyone, in fact it was hailed as the clinician's best and surest aid in the diagnosis of tuberculosis.

The sale of tuberculin doubled—always unfortunately a factor in this country for the propagation of a test, commercial houses began sending out literature on these points. In many hospitals it became a routine practise to perform the cutaneous or ocular test on every patient, so that before long data began to accumulate. The early articles were nearly all extravagantly in favor of it. Then, true to the natural swing of human point of view, less and less favorable comments began to appear, until at present there is a widespread questioning as to its diagnostic value.

It was in an attempt to answer this general criticism of student and practitioner alike that I thought it worth while to summarize my material at the Children's Hospital, 548 cases having been reviewed. In some of these, all forms of reactions were tried—subcutaneous, ophthalmic and cutaneous; both von Pirquet and Moro; so that from a study of these one ought to be able to gain a fairly definite idea of the value of the different reactions. The subcutaneous test was done in conjunction with one or more of the other tests in 25 cases only, so that its value in diagnosis I shall not consider, as none of these cases were of the acute kind in which diagnosis by some laboratory means is most to be desired. The ophthalmic reaction was done in 130 cases, and the cutaneous in 418 so that we may be able to draw some conclusion from a study of these cases.

My experience with the ophthalmic reaction is very much in accord with that reported by Graham and White, in that I have had no bad results in any case, and from my own clinical experience I cannot say that this test is in any way dangerous. If the children can be absolutely under control and if mild lotions can be started as soon as any definite reaction occurs, there is no need of fearing any corneal ulceration or any other unlooked-for occurrence. The reaction in these cases, I find, appears as early as in any other tuberculin test, and, if properly treated, does not last any longer. The ophthalmic reaction is not nearly as likely to occur in negative cases or negatively suspicious cases as is the cutaneous, and is more apt to occur in the acute cases than is the cutaneous, although my percentage of positive reactions is not very much higher in affections like tuberculous meningitis than it is with the cutaneous. However, over a year ago on account of outside criticism I stopped using this reaction, and so have not followed it up in any quantitative or qualitative method, and most of my figures and work are from the 418 cases done with the cutaneous method.

Cutaneous reactions are perhaps the least objectionable and if properly controlled and judged in conjunction with a careful and accurate physical examination, are, I think, of certain definite value. The technic followed was as follows: A simple watchmaker's screwdriver was used for the scarification, two small abrasions about one inch apart made and to one of these tuberculin applied, and to the other water or glycerin, or nothing. I could see no advantage in using any control solution. The tuberculin used throughout was that obtained from Alexander & Co. As far as I have been able to tell clinically it has been perfectly uniform. About five or seven turns of the scarifier are necessary; a very small platinum loop was used for the drop of tuberculin.

Of the 418 cases tested by the cutaneous method, 130 were clinically positive cases. There were positive reactions in 85.2% of these cases; 14.8% of these cases gave negative reactions. There were 108 negative cases, only 9.3% of these giving positive reactions. There were 174 clinically suspicious cases; 57.4% of these gave positive reactions; 42.6% being negative. There were 30 cases of tuberculous meningitis, 20 of which or two-thirds gave positive reactions, in at least five of these cases the reaction did not appear in the first 24 hours; in one case it did not appear until after 48 hours. In the 10 cases which gave negative reactions, I could make no clinical differentiation from those that reacted positively, and certainly no prognostic significance could be assigned to either the appearance or non-appearance of the reaction in this condition. There were 14 cases of tuberculous peritonitis; in all 14 the reaction was positive. There were 30 cases of pleurisy, some plastic and some serous. In 20 of these the reaction was positive and in 10 negative. In only two of these cases was animal work done; in both of these, which resulted negatively in the guinea pigs, the cutaneous tuberculin gave negative results also.

As regards the age of the patients, 17% of the cases tested were under one year of age; 35% were two years or under; 62.5% of the cases were under five years; 37% of the cases were between 5 and 12 years; and 94% were under 10. These findings compare very favorably with autopsy records of children under 12 years of age, and certainly in the cases under five years of age suffering from any acute infection, the question of latent tuberculosis cannot be a very serious one.

In comparing different kinds of tuberculin, I made use of the bovine bouillon filtrate, human bouillon filtrate and Koch's old tuberculin. A comparison of these is interesting, only, of course, in positive cases; in supposedly positive cases there were only 11.6% which gave no reaction, whereas there were 58.2% in which all three reacted. There were only 2.4% in which both the human forms reacted; the bovine being negative; whereas there were 27.8% in which O. T. reacted; and 7% in which the bovine and the O. T. reacted, the human bouillon filtrate being negative. In none of these was the bovine positive and the human negative. The series comprises 50 cases of cervical adenitis which form is supposedly more often a bovine infection.

In another series of cases comparing suspected pulmonary tuberculosis, bronchitis and lobar pneumonia, there were only 5% of positive cases among the patients with lobar pneumonia, whereas there were 69% positive reactions from the suspected pulmonary tuberculosis cases. It would seem then that a positive reaction is certainly of marked diagnostic value in even the most acute tuberculous infection in children; for certainly if a reaction of this kind will give positive results in 66% of tuberculous meningitis cases, the method must have some definite value. Negatively the reaction is of little value though the presumption would be strongly in favor of its being correct if tested by a number of repeated trials. There is certainly no danger in the application of any of the local tests as out of these 500 cases there were practically no systemic reactions. The comparison of different forms of tuberculin only confirms work that has already been done, in that there is no differentiation to be made between infection by the bovine type of the tubercle bacillus and the human type. It would seem that the old tuberculin is by far the best and most reliable form of tuberculin for general use, and that this, with a single control, gives by far the best results.

A careful study of these tables cannot but impress one with the fact that the cutaneous tuberculin test, when used as an aid in the diagnosis of acute disease in childhood, and especially in infancy, has a definite place and is as useful as most of our laboratory methods, simply as added testimony in favor of or against the condition being a tuberculous process. The physical examination of the child, its past history and family history, especially the question of possible contact, are most decidedly the important factors in every case in which there is the question of a diagnosis of tuberculosis. But having all these facts and still being undecided, the tuberculin test is but an added confirmation. The younger the child the more will a positive reaction weigh.

A test that appears rapidly, produces a marked reaction, and remains for a long period, should be taken seriously into consideration in forming one's opinion of the case. The converse of this, however, is not true—a negative test may mean anything, and in such a case it would be a great mistake to jump to favorable conclusions.

From our understanding of the reactions, a positive reaction indicates the presence of a sufficient number of free tuberculous antibodies which are drawn to the place of reaction and there cause a local necrosis of the superficial cells which have absorbed the tuberculous toxin found in the reagent (tuberculin). The more free or unsatisfied antibodies there are, the greater will be the necrosis. A latent process or a subacute process will probably have enough free antibodies generated to produce the reaction to a more or less marked degree. An active process may behave perfectly logically in two very different ways. If the production of antibodies, at the time of making the test, is in excess of the amount of toxin (with which it is able to enter into combination), then there will be a marked local attack producing a necrosis of the cells which have absorbed the test toxins. On the other hand, however, the organism may be overwhelmed by the toxins of the original tuberculous infection with the result that few or no antibodies are produced and the organism is rapidly overcome with the original infection. If antibodies are produced, their production at the time of making the test, may be limited to a number not nearly sufficient to combine with or satisfy the needs of the invading toxin and so it may and does happen that repeated tests often vary in their appearance or in their intensity, so that a test may fail to produce a reaction at one stage of the infection and may produce a very marked reaction at another time, depending on the available or free antibodies that can be mustered to the place of the locally applied toxin. The recognition of these facts is intimately related to the understanding of the case so that this test is of little value to one not familiar with the case from every point. It can become of considerable value to one willing to view the case as a whole and not, as is so often done, from one point of view only.

Report of a Case of Hodgkin's Disease with Recurrent Fever. A Study of the Literature of this Condition.

By JOHN PHILLIPS, M. B., Assistant Professor of Medicine Western Reserve University, Cleveland

In Hodgkin's disease three different types of elevation of temperature have been described by Gowers.[1] In the first type the temperature is continuously raised, presenting very slight diurnal variations of a degree or a degree and a half. The highest temperature is sometimes in the morning, sometimes in the evening. The degree of elevation is usually from 100° to 103°. The second type is characterized by morning remissions, the temperature being always higher in the evening than in the morning. The daily variations are from one to three degrees, the morning temperature being at or below 100°—sometimes even normal, and the evening temperature varying from 101° to 103°. The third type is marked by periods of pyrexia in which for several days a high temperature is maintained, the daily variation being slight. Alternating with these pyrexial periods are intervals of several days, in which the temperature is normal or slightly subnormal. The temperature during the periods of pyrexia may reach 105°. The case of Hodgkin's disease here reported belongs to the third type.

J. H., male, aged 17, was admitted to the surgical wards of Lakeside Hospital, Sept. 21, 1904, because of a swelling of the glands on the left side of his neck. The family history threw no light on the case. None of his relatives had ever suffered from tuberculosis. He does not remember having had any of the diseases of childhood or any other illness but he has always been rather weak and delicate. He denies venereal infection. His present illness dates from February, 1904, when he noticed that his collar was too small and that his neck was larger on the left than on the right side. Since then it has gradually increased in size. The swelling came first in hard lumps but these seemed to grow together. There has been no loss in weight. Physical examination at that time revealed a large diffuse swelling on the left side of the neck extending from the ear downwards to the clavicle. On palpation this mass consisted of a number of hard rounded bodies, the largest being just above the clavicle. No note was made of the condition of the other superficial lymphatics and nothing abnormal was found in the rest of the examination. His neck measured 18 inches at the base. An operation was performed for the removal of the tumor mass by G. W. Crile. An incision five inches long was made extending from just below the ear downwards to the middle of the clavicle. The sternomastoid muscle was divided and the tumor exposed. It was shelled out in large rounded pieces, the largest being removed from the lowest part of the neck, where it extended inferiorly behind the left clavicle. The wound healed by first intention and x-ray treatment to the scar was given until his discharge from the hospital on October 15, 1904. His highest temperature before the operation was 99.5°. On the two days following it was 101.8° and 101°; after that the temperature remained normal.

Examination of the excised glands showed the appearance described as characteristic of Hodgkin's disease. On section the glands were grayish, translucent in appearance and showed no evidences of suppuration. Microscopically there is noted a disappearance of the germinal centers. The capsule of the gland is thickened and there is considerable increase of the fibrous stroma of the gland. There are very numerous epithelioid cells, with a large nucleus and a small amount of granular protoplasm. Some of these cells are elongated; others take on the type of giant cells with a single large nucleus or with many large nuclei. There is a diminution of the cells of the lymphocytic type, and an increase of the eosinophilic leukocytes.

He was readmitted to the hospital on the medical service, October 26, 1905, complaining of fever, pain, and swelling of his neck. Six weeks after leaving the hospital the glands in his neck again began to enlarge and they were slightly painful. Since then his neck has gradually increased in size. At times he has felt feverish in the afternoon for several days. At other times he would feel apparently well and have a good appetite. He has lost 15 pounds in weight.

Physical examination: Patient was poorly nourished and somewhat cachectic looking, with considerable pallor of the skin and mucous membranes. He looked very ill. His tongue was coated and tremulous; there was no enlargement of the tonsils. The thyroid gland was not enlarged. All the superficial lymphatic glands were enlarged but especially those on the left side of the neck. Here, on a line corresponding to the sternomastoid muscle, there was a marked tumor, over which was the scar of an old incision, running from just behind the angle of the jaw to the middle of the left clavicle. The tumor was slightly movable and consisted of quite hard, nodular masses, which were evidently enlarged lymphatic glands. The glands on the right side of the neck in the same region were also considerably enlarged. His lungs and heart were normal. His pulse rate was 120; his blood pressure 110 mm. Hg. His abdomen was soft; there was no distention and no masses were felt. The lower edge of the liver was not palpable. His spleen was palpable and rather hard. There was no edema of the extremities and his tendon reflexes were normal.

His treatment consisted of soft diet, rest in bed, Fowler's solution, m. IV, and tinct. ferri chloridi, m. XV, after meals. During the time the patient was in the hospital he had three periods of fever, the average duration of which was 14 days, alternating with three afebrile periods the average duration of these being 10 days. During the febrile periods the temperature gradually ascended until it reached 103°, sometimes 103.5°, then fell somewhat more rapidly to normal. During the febrile periods his pulse would rise, he would feel quite ill, and the glands and spleen would enlarge. In the apyrexial intervals the patient would feel quite normal, and the glands and spleen would become smaller. During his stay in the hospital his glands diminished considerably in size. During his last pyrexial interval he had quite severe nose bleed, which was due to an ulcer on the septum, the result of an atrophic rhinitis. Several examinations of the urine were made and it was always found normal. The following blood examinations were made:

October 26, 1905 (pyrexial period), red corpuscles 4,200,000; white corpuscles 2,500; hemoglobin 55%. The differential count showed polymorphonuclear leukocytes 71%, small mononuclears 15.5%, large mononuclears and transitionals 10.5%, eosinophiles 3%. The red corpuscles stained well, showed little variation in size and shape, and one nucleated cell of the normoblastic type was seen.

Oct. 29 (pyrexial period), white corpuscles 2,600; hemoglobin 50%.

Nov. 16 (beginning of pyrexial period), red corpuscles 4,100,000; hemoglobin 45%; white corpuscles 2,600.

Nov. 19 (height of pyrexial period), white blood corpuscles 2,300; hemoglobin 44%.

Nov. 26 (apyrexial interval), red blood corpuscles 4,512,000; hemoglobin 50%; white corpuscles 2,800.

Dec. 16 (end of pyrexial period), red blood corpuscles 4,280,000; hemoglobin 43%; white corpuscles 2,100.

Dec. 24 (apyrexial interval), white corpuscles 3,800; hemoglobin 8%.

The patient left the hospital on Dec. 29, 1905, in an apyrexial interval and continued taking arsenic irregularly during the next three and a half months and was admitted again to the medical service, April 20, 1906, complaining of weakness, soreness in his legs, pain in his abdomen, and cough. Since leaving the hospital he had been at times chilly and feverish and felt quite ill, though he did not keep a definite record of these periods. He was more feverish in the afternoon and evening and at times had profuse sweating at night. Three weeks before his last admission he felt very weak and tired and became so short of breath that he could only with great difficulty go up stairs. He had some cough but had not expectorated any blood. He had also been troubled a great deal with nausea. For the previous four days he had complained of a troublesome pain in the left side of his abdomen.

Physical examination: Patient was very pale and emaciated. His hair was dry and falling out; his skin was dry and showed brownish pigmentation on the face and forehead. He looked quite ill. His right pupil was larger than the left; both reacted well to light and accommodation. All the superficial lymphatic glands were enlarged, but especially those of the neck, which were quite large and firm. Posterior to the angle of the left jaw was a distinct mass, 5x3 cm. in size, made up of individual glands. Just below this mass was the scar previously described.

The examination of the chest showed a slight diminution of resonance with increased resistance at the apex of the right lung. A few dry rales were heard throughout both lungs.

The heart was of normal size but the first sound at the base was partly replaced by a soft blowing systolic murmur. This could be heard faintly at the apex. There was some accentuation of the pulmonic second sound. The pulse was regular, rhythmic, full volume, rate 80 per minute, blood pressure 100, artery wall not thickened.

The abdomen was full and distended with distinct bulging in the left hypochondrium extending below the level of the umbilicus. The flanks were flat on percussion and a fluctuation wave could be made out so that there was evidently fluid in the peritoneal cavity. The liver was enlarged, extending from the fourth interspace to a point 5½ cm. below the right costal border in the mammary line. The spleen was considerably enlarged, hard, and firm, and extended from the sixth rib in the left axillary line to a point 17 cm. below the left costal border and anteriorly almost to the midline in the epigastrium. There was no edema of the extremities. The tendon reflexes were normal.

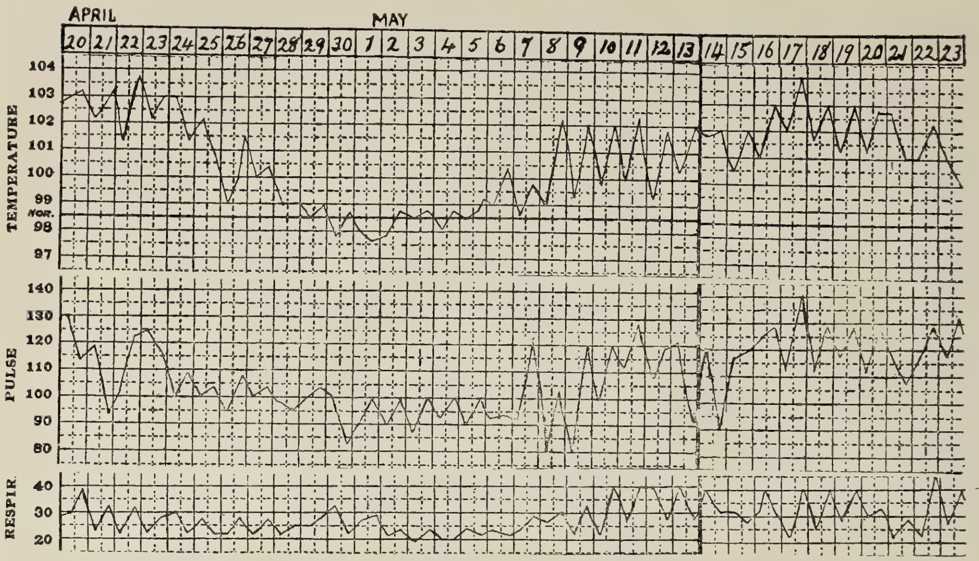
The patient was given iron and arsenic during the greater part of the time he was in the hospital but with no apparent benefit. The following notes were made of his condition: May 5, 1906, patient feels better and has had a good appetite during the past four days in which his temperature has been normal. The glands and spleen appear to have decreased in size. Amount of fluid in the abdomen about the same as on admission.

May 12, patient now having fever and feels very ill. The superficial glands everywhere have increased in size but especially the posterior cervical and posterior auricular glands on both sides. The mass posterior to the angle of the left jaw is much enlarged. Not much change in the size of the spleen can be noticed. There is evident increase in the amount of fluid in the peritoneal cavity and there is some edema of his lower extremities. Fowler's solution was discontinued because of symptoms of intolerance.

May 13, the abdomen was tapped today and 4,500 c.c. of pale olive colored fluid removed. This was quite clear, sp. gr. 1.008, alkaline, contained five grams of albumin to the liter, and did not reduce Fehling's solution. The cells were very few in number and chiefly mononuclear leukocytes. Cultures were made on various media but showed no growth. A guinea pig which was inoculated died two weeks later from some other cause, but showed no evidences of tuberculosis.

May 21, abdomen again tapped, 4,000 c.c. of fluid of the same character as that described above being removed. After the tapping a friction rub could be distinctly heard over the spleen.

May 26, patient has just finished a period of fever, during which he was very sick, with no appetite and with quite troublesome diarrhea. During this period his spleen and the glands have increased in size. Patient does not cough at all and nothing further can be made out in the lungs, than that noted on admission.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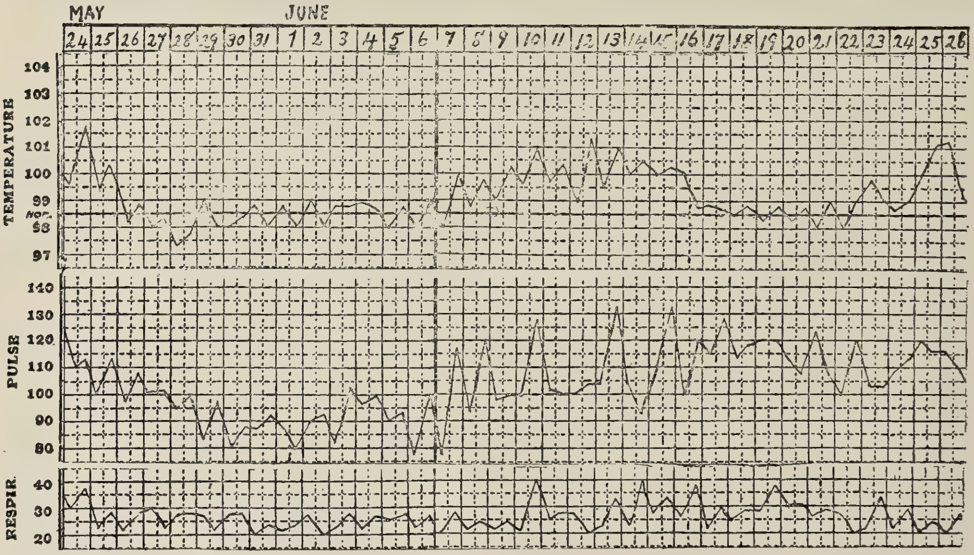
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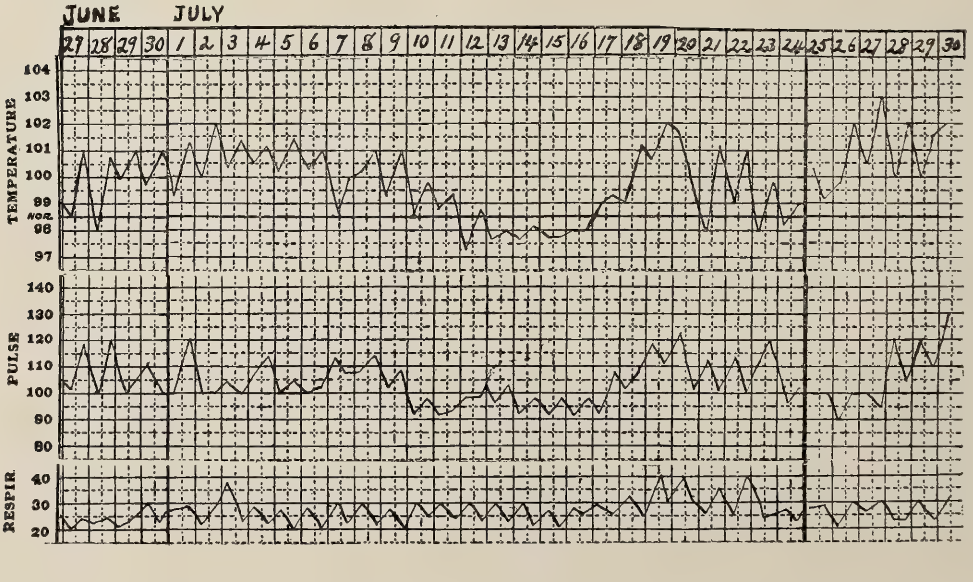
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June 6, for the past 10 days the patient has been free from fever, has felt well and has been quite cheerful. The abdomen fills up quickly so that he has to be tapped every six or seven days. The glands remain about the same in size as at the last note.

From this date until his death the patient grew gradually weaker. In the afebrile periods he would brighten up; the glands and spleen would remain stationary or slightly decrease in size; while in the febrile periods he would appear very ill and depressed, and the glands and the spleen would enlarge. During the febrile periods he sometimes had troublesome epistaxis and diarrhea. His abdomen was greatly distended, so that a paracentesis was necessary about every sixth day, six tappings in all being done. The fluid was always of the character above described. His sputum was carefully examined several times for tubercle bacilli, but none were found. He grew gradually weaker and died July 30, 1906.

The following blood examinations were made:

April 20, 1906, (febrile period), red corpuscles 2,248,000; white corpuscles 1,800; hemoglobin 28%. The differential count showed polymorphonuclear leukocytes 55.5%, small mononuclears 28.3%, large mononuclears and transitionals 15.2%, eosinophiles 1%. In the stained smear the red corpuscles showed considerable variation in size and shape, and an enlarged pale area. No nucleated red cells were seen. The Widal reaction was negative.

April 27 (near the end of febrile period), red corpuscles 2,048,000; white corpuscles 1,900; hemoglobin 30%.

May 6, (beginning of febrile period), red corpuscles 2,784,000; white corpuscles 2,300; hemoglobin 35%.

May 10 (height of febrile period), red corpuscles 2,508,000; white corpuscles 2,200; hemoglobin 35%; coagulation time 2½ minutes. The differential count showed polymorphonuclear leukocytes 50.5%, small mononuclears 28%, large mononuclears and transitionals 20.5%, eosinophiles 1%. No nucleated red cells were found.

May 18 (febrile period), red corpuscles 2,100,000; white corpuscles 3,400; hemoglobin 30%. The differential count showed polymorphonuclears 49.5%, small mononuclears 35.4%, large mononuclears and transitionals 14.1%, eosinophiles 1%.

June 6 (afebrile period), red corpuscles 3,168,000; white corpuscles 3,400; hemoglobin, 40%.

June 10 (febrile period), red corpuscles 2,904,000; white corpuscles 2,600; hemoglobin 40%.

June 18 (afebrile period), red corpuscles 3,056,000; white corpuscles 2,100; hemoglobin 40%.

June 26 (beginning of febrile period), red corpuscles 2,848,000; white corpuscles 2,800; hemoglobin 35%.

July 3 (febrile period), red corpuscles 3,328,000; white corpuscles 3,200; hemoglobin 40%.

July 4 (febrile period), white corpuscles 4,200.

July 5 (febrile period), white corpuscles 4,300.

July 6 (febrile period), white corpuscles 4,100.

July 7 (febrile period), white corpuscles 5,600.

July 8 (febrile period), white corpuscles 5,200.
July 9 (febrile period), white corpuscles 6,800.
July 10 (febrile period), white corpuscles 9,400.
July 11 (febrile period), white corpuscles 11,000.
July 12 (afebrile period), white corpuscles 10,900.
July 13 (afebrile period), white corpuscles 10,600; red corpuscles 3,832,000; hemoglobin 40%.
July 14 (afebrile period), white corpuscles 9,100.
July 15 (afebrile period), white corpuscles 9,200.
July 16 (afebrile period), white corpuscles 8,000.
July 20 (febrile period), white corpuscles 7,200.
July 21 (febrile period), white corpuscles 7,800.
July 22 (febrile period), white corpuscles 9,200.
July 23 (febrile period), white corpuscles 10,400.
July 24 (febrile period), white corpuscles 11,800.

Autopsy protocol (abstract): Anatomical diagnosis—chronic hyperplasia of the retroperitoneal, aortic, bronchial, tracheal and right cervical group of lymph glands (Hodgkin's disease); subacute perisplenitis and periphepatitis; caseous tuberculosis of two bronchial lymphatic glands; acute circumscribed inflammatory tuberculosis, associated with thrombosis, of lungs, liver, spleen, kidneys and some of the bronchial and cervical lymph glands; hydroperitoneum and edema.

The body is that of an emaciated male boy, 156 cm. long. The body heat is still present; rigor mortis is absent. Except for slight lividity of the dependent parts, the body surface is blanched. Extensive edema of the lower extremities, the back, and the scrotum is present. The abdomen is distended; between the umbilicus and the pubes, there are several scars the result of paracentesis. On the right side of the neck posterior to the body of the sternomastoid muscle, and below and behind the angle of the jaw, is a mass of glands, 6x3 cm. in size, firm, circumscribed, and movable. The axillary and inguinal glands are not enlarged.

On opening the abdomen the subcutaneous fat is practically absent; the muscles are very pale. The peritoneal cavity contains 4,820 c.c. of clear straw colored fluid; the peritoneum is whitened and thickened. The spleen is enlarged and hard and is adherent at its upper surface. The liver is also adherent to the diaphragm by means of soft, organizing adhesions. The retroperitoneal tissue is increased in amount and is dense and hard.

The heart is of ordinary size and appearance and shows nothing abnormal. The left lung is free from adhesions. The left pleural cavity contains 180 c.c. of clear fluid. The lung is partially collapsed and is everywhere studded with small, millet-seed-sized, discrete nodules, some of which shine through the pale mottled pleura. On section both lobes are equally filled with separate small, grayish yellow nodules, varying in size from a pin point to 2 mm. in diameter, and surrounded everywhere by air-containing lung tissue. There are no conglomerate tubercles. The bronchial glands are enlarged and two of these contain cavities filled with yellow pus. They are deeply pigmented. The right lung is free from adhesions and the right pleural cavity contains 120 c.c. of clear fluid. The right lung is similar in all respects to the left. The right bronchial glands are also enlarged. The vessels are normal.

Surrounding the bifurcation and extending upwards 6 cm. on the trachea, is a mass of enlarged lymph glands which lie somewhat to the right; the largest of these measured 4 x 3 x 2 cm. The glands are all separate and are surrounded by thickened capsules, and show a slightly thickened interglandular stroma. On section the glands have a grayish translucent appearance, with here and there a whitish pin point area and a few reddish points. Some of the enlarged glands contain black pigment. They are all firm and hard and show no evidence of softening.

The cervical glands are much enlarged and form a mass 3 x 6 cm. in size posterior to the sternomastoid. This mass is composed of several discrete enlarged glands, grayish translucent on section. The capsule of the gland is thickened and there is considerable increase of fibrous stroma.

The liver measured 29 x 18 x 7 cm. and weighs 1,145 grams. The left lobe is triangular in shape and extends to the parietal wall above the spleen, being 3 cm. thick in the largest portion. The entire superior surface of the liver is adherent to the diaphragm by partially organized fibrous adhesions, and showing through the capsule everywhere are raised, grayish white, and separate areas. On section these areas appear to be distributed throughout the organ uniformly. Besides these nodules the cut surface shows a grayish yellow, translucent tissue, intermingled with brownish yellow tissue; together these make up the lobules, which are blurred and indistinct. The grayish yellow translucent tissue is everywhere distinct from the tubercles. The edge of the liver is sharp. The gall bladder is adherent, because of enlarged glands at the hilum of the liver. The bile ducts are patent.

The spleen measures 21 x 12 x 8 cm. and weighs 1,120 grams. It is mottled in color and generally smooth. The upper surface is adherent to the under surface of the left lobe of the liver by partially organized adhesions. On section the organ is firm, and is studded with grayish yellow, pin-head-sized tubercles. Scattered here and there throughout the spleen, are small gray translucent areas resembling lymphoid tissue, the largest of these being 3 mm. in diameter. The Malphighian bodies are not visible; the trabeculae are not prominent. The capsule is somewhat thickened and the pulp is pale red in color.

The left kidney measures 11 x 7 x 3.5 cm. and weighs 150 grams. The capsule strips readily leaving a mottled surface. Everywhere on the surface are to be seen small, grayish yellow tubercles, the largest of which measures 1 mm. in diameter. On section the cortex is 8 mm. wide; the striae are indistinct and the tissue anemic. Many small scattered tubercles are seen on the surface. The pelvis and the ureter are normal. The adrenals are normal in size and appearance. The right kidney measures 11 x 6 x 3.5 cm. and weighs 115 grams; otherwise it is similar in every respect to the left.

The retroperitoneal glands form a firm hard tumor extending from the pelvic brim to the diaphragm. The glands are enveloped in a dense fibrous tissue, and their capsules are thickened. On section the gland tissue is grayish yellow in color, translucent, hard, and shows several fine, yellowish areas, with now and then a hemorrhagic point in the cortex. The largest measures 4 x 1.5 x 2 cm. They are all separate and distinct, and surrounded by an increased amount of fibrous tissue.

The pancreas is partially imbedded in the glands and appears normal.

The stomach, intestines and other organs appeared normal. The brain was not examined.

Histological examination. Lymph glands: Sections were made completely through glands of medium size and through portions of the largest glands. The section of a medium sized gland, measuring 10 x 7½ mm., shows a variety of changes. The capsule is somewhat thickened and the structure of the gland is completely transformed, due to a complete disappearance of the germinal centers. The tissue is composed of cells of various sizes and types supported by a variable but never conspicuous amount of fibrous tissue. Cells of the lymphocytic type are relatively few in number. The most numerous cell is a relatively large flat or polygonal type cell with a relatively large vesicular nucleus and with a smooth or finely granular cytoplasm, which stains faintly but decidedly with eosin. Where these cells are crowded together, especially in the neighborhood of connective tissue trabeculae, they are often elongated and even of a spindle shape. These cells apparently take their origin from the so-called reticulum cells of the tissue. They undergo various transformations. Some apparently differentiate into fibrous tissue, at least they become very much elongated, the nuclei becoming denser, and they have all the appearances of young and differentiating fibrous tissue cells. Another fate is the formation of giant cells and all gradations can be traced between the flat or polygonal cells and large multinucleated giant cells. Hypertrophy of the nucleus seems to be the first step in this change. The large giant cells may have a single giant nucleus with one or many buds; exceptionally the giant cells have a number of small nuclei. These nuclei are, with few exceptions, at or near the center of such cells. In some areas there are considerable numbers of eosinophilic leukocytes. In some portions of the glands there is an apparent increase in the number of blood capillaries, in other portions an apparent decrease. There are no appearances suggestive of the histological structure of tuberculosis. The condition is evidently an inflammatory lesion of the subacute type. Exactly the same appearances are met with in sections which include a portion of the very much enlarged glands. In other glands, both large and small, in addition to the changes above described, there is a marked formation of a rather dense fibrous tissue poor in blood vessels, nearly devoid of lymphocytes, but containing variable numbers of flat and elongated cells and of giant cells in various stages of development. Eosinophilic leukocytes are not so numerous in these glands as in the first type described. Sections of several of the glands of both types show recent thrombi of both veins and arteries. The walls of some of these thrombosed vessels are infiltrated with mononuclear leukocytes and some of the thrombi are composed largely of cells which are necrotic. No definite histological tubercles are found.

Lungs: Sections of the lungs are studded with very small pneumonic areas in which the pulmonary alveoli are the seat of both an alveolar and an interstitial exudation. The alveolar exudation consists of fibrin, desquamated epithelial cells, polymorphonuclear and mononuclear leukocytes. In some places the tissue is necrotic and is undergoing caseation. Many of these areas of pneumonia are in definite connection with vessels showing recent thrombi. There are no miliary tubercles in the ordinary sense. In stained smears from the pus of the thrombi, tubercle bacilli were found.

The spleen, the liver and the kidneys show small areas crowded with leukocytes but no typical histological tubercles. These areas are usually in connection with blood vessels and many of them show caseation.

The case above described, from the clinical history and the pathological findings is undoubtedly one of Hodgkin's disease. For many years confusion has existed in regard to the pathology of this disease, some regarding it as a peculiar form of tuberculosis of the lymph glands. It is now generally conceded that in Hodgkin's disease there is a definite and characteristic pathological picture. This was described as early as 1877 by Greenfield.[2] Later, in a discussion before the London Pathological Society, Dec. 13, 1901, Butlin and Andrews[3] from an investigation, clinical and pathological, of 20 cases, gave a very clear and accurate account of the changes found in the glands and other tissues in Hodgkin's disease. Early the glands may be comparatively soft, but later they are exceedingly hard, feeling like firm fibrous tissue bound not merely to each other but to the surrounding parts. On section they are quite homogeneous, look almost like a section of brain with here and there little blotches or spots with lines of blood vessels on them. Microscopically the glands present the following changes according to Andrews: (1) The general plan of the structure of the glands is obscured and simplified; the distinction between the cortex and medulla is abolished, or nearly so, so that the whole gland has a more homogeneous appearance. (2) The number of lymphocytes is apparently very much decreased; they are proportionately scanty and no longer conceal the supporting framework of the gland. (3) In correspondence with this the framework has undergone hyperplasia, the fibrillar reticulum is conspicuous,—its increase may amount to an actual fibrosis. The endothelial cells in connection with it are more numerous and much more evident; here and there some of them attain a very large size and may contain two, four, or more large and deeply stained nuclei. These are the cells especially characteristic of Hodgkin's disease and an endothelial origin may fairly be ascribed to them. They are especially numerous in the soft rapidly growing forms of the disease; they are not always uniformly distributed, but sometimes occur numerously at special places, and sometimes large and beautiful karyokinetic figures are demonstrable in them. They have little resemblance to the giant cells in tubercle as they are not so large as the latter, they are more rounded, and their nuclei, fewer in number, are larger, stain more deeply, and occupy a more central position; their protoplasm has less tendency to degenerate changes. (4) The eosinophilic cells present in normal glands are always demonstrable in Hodgkin's disease, sometimes but not always in greatly increased numbers.

In this country similar findings were described by Dorothy Reed[4] in 1902 and later by Longcope[5] and others.

In view of the fact that our patient had a miliary tuberculosis what is the relation of the latter disease to Hodgkin's disease? The tuberculosis was evidently a terminal infection, in all likelihood having its origin in two caseous bronchial lymph glands. The tubercles throughout the different organs were all apparently recent and were all small and definitely related to a thrombosed blood vessel. It is quite conceivable that a patient with a chronic disease such as this should more readily fall a prey to tuberculosis just as one sees in other cachectic conditions, *e. g.*, diabetes. What evidence have we against the theory that Hodgkin's disease is a peculiar form of tuberculosis? Clinically the glands are harder and show no tendency to caseation as they do in tuberculosis; histologically tuberculosis of lymph glands is at first a focal lesion and the fibrosis in tubercle tends to form a capsule as it were to the diseased areas. One does not see a diffuse affection of the gland as in Hodgkin's disease. In nearly every case of tubercle the characteristic giant cells are to be found. Finally the finding of tubercle bacilli gives certain evidence that the gland is tuberculous. Inoculation of animals with portions of the affected glands in Hodgkin's disease gives negative results in a great number of cases. It has been argued that because many of the animals inoculated have died of tuberculosis that this is positive proof that Hodgkin's disease is a modified form of tuberculosis, but Pizzini has shown that 42% of guinea pigs inoculated with glands from 40 bodies dead of non-tuberculous affections showed tuberculosis, so that the finding of tuberculosis in a certain number of guinea pigs inoculated with glands in cases of Hodgkin's disease carries no weight. Since the time of Virchow many have claimed that Hodgkin's disease was a form of lymphosarcoma. Against this view it may be urged that the growth differs from malignant tumors in the absence of infiltration of the capsule and surrounding tissues, and the fact that malignant disease does not metastasize in one form of tissue only. Adami in his recent book says that to speak of Hodgkin's disease as a form of lymphosarcoma is absolutely unjustified.

The unusual feature of this case was the long continued recurrent fever, lasting nine months. In the original article in 1832 by Hodgkin[6] "On Some Morbid Appearances of the Absorbent Glands and Spleen" is described a case of this type—"Martha Newton, aged apparently about 25 years, a patient of Dr Bright's in Dorcas's ward, into which she was admitted on the 17th instant. She had come to town from Brighton and described herself as laboring under intermittent fever but her appearance did not altogether accord with his idea of ague. She stated that she had been taking bark prior to her coming to town and a repetition of the bark or sulphate of quinine was prescribed. Her pulse was not remarkable either for quickness or irregularity, and none of her complaints suggested a suspicion of disease of any of the viscera of the thorax. She had one paroxysm shortly after her admission, which was reported by the sister of the ward to differ from the ordinary paroxysm of ague. She was seen by Dr Bright in another of these paroxysms on the 19th. The quinine bark was continued but some local or visceral disease rather than ague was suspected. She died suddenly on the morning of the 20th after eating a moderate breakfast." The autopsy proved this case to be one of Hodgkin's disease. In 1858 Wunderlich[7] described a case of this type in which he once noticed during a period of fever an increase in the size of enlarged glands and spleen with a diminution in their size when the temperature fell. In 1870 Murchison[8] reported a case of Hodgkin's disease in a girl aged six in which the enlargement of the glands appeared six weeks after an attack of whooping cough. She had periods of fever lasting 14 days alternating with apyrexial intervals lasting 10 days. In the latter periods the child appeared well, played about and had an enormous appetite, while during the periods of pyrexia the child was languid, had aching pains, and the enlarged glands increased in size and became quite tender. Nine years later Gowers called attention to the three types of temperature in Hodgkin's disease previously described and mentions a case with recurring fever that had been under the care of Wilson Fox. This case had marked increase in the size of the glands during the pyrexial period. Pel[9] in 1885 reported a case of Hodgkin's disease in a man aged 25 years who had recurring fever during the four months he was under observation. Two years later[10] he recorded two similar cases. Osler[11] also in the same year (1885) mentions one of his private cases with similar clinical symptoms. Under the title "Das chronische Rückfallsfieber eine neue Infectionskrankheit," Ebstein[12] describes the case of a mechanic 19 years old, with periods of pyrexia lasting 13 or 14 days alternating with periods of apyrexia of 10 or 11 days' duration. He had nine such pyrexial periods in 211 days. The rise in temperature was quite gradual but the fall was relatively more rapid. Ebstein also observed that the patient during the period of fever, was quite ill, lost rapidly in weight, had little or no appetite, had headache, pain in the abdomen and enlargement of the spleen. Similar cases have been reported by Hanser[13], Völckers[14], Klein[15], Stevens[16], and others. H. Batty Shaw[17] in 1901 reports a case of this type in which with the accessions of temperature, besides the local glandular changes there were rigors, anorexia, vomiting, and diarrhea. He gives an excellent résumé of the literature, analyzing 17 cases. He found that the time that elapsed between the onset of the fever and death in the cases reported varied from 2½ months to 14 months. In our case it was at least nine months.

Many attempts have been made to demonstrate microorganisms in these cases. Maffucci[18] found streptococci and bacilli in the enlarged glands. Majocchi and Pecchini[19] found a micrococcus and a short bacillus in all the parts of the body affected. Cardarelli[20] found a typhoid-like organism. Klein found streptococci in the cortex of some of the affected glands. Evidently the presence of these organisms was due to a terminal infection. Neither in our case nor in any of the cases described has a leukocytosis been found during the periods of fever. The duration of the pyrexial periods and the apyrexial intervals is of such regularity as to suggest the possibility of a definite life cycle of some organism, which might cause the temperature. Indeed the temperature charts in the cases reported resemble each other so closely that the appearance of the chart itself would at once suggest to the observer that the case was one of Hodgkin's disease with recurring fever, just as the appearance of a malarial chart would suggest malaria.

In conclusion I wish to thank Dr Edward F. Cushing for the privilege of reporting the clinical history of this case, and Dr W. T. Howard for the use of the autopsy report and for valuable assistance in the study of the pathological material.

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Is a High School Education Sufficient Preparation for the Study of Medicine?

By F. C. WAITE, Secretary of the Medical Department of Western Reserve University.

The boy just graduated from high school who has decided to enter the medical profession—whatever may be the factors that have led him to this choice—faces a most important and immediate problem. He must decide whether he is to enter directly into a medical school or to secure additional preliminary education and training before he begins the medical studies.

Many a one, because of haste and lack of sufficient data makes a serious blunder at this point in his career. He fails to investigate properly the arguments pro and con as to what constitutes efficient preparation for medical study, and accepts the well-meant but ill-judged advice of someone and proceeds to try to build his professional training upon a foundation too small and too weak to carry it.

We may assume that everyone preparing to enter the medical profession hopes to work out a successful career. The medical career is one of many points of contact. It is not alone technical: it has its social, sociological and public relations. "Physicians and surgeons are not mere practitioners; they are also human beings." The physician is, by his profession, a semipublic servant: much more so than are members of most other professions. His calling brings him into contact with all conditions of men and his relation to these is very intimate. He is a factor in the general welfare of the community; not only in its physical welfare, but in its moral, mental and social prosperity as well. He is more than a technician or a tradesman, and he must—if he is to succeed—be prepared to discharge efficiently all these correlated obligations as well as to execute his main purpose of combating disease. He cannot confine his activities to diagnosis and the giving of medicine. He must be ready as adviser and friend. He must be prepared for public service. He needs the power of trained personality if he is to protect his entire constituency—the public at large—in the maintenance and advance of public health. And since he is more than a physician, he needs more than merely a medical training. The high school has given him a certain sort of training of a routine nature. Such is essential at that developing period of a boy's life, but not all-sufficient for the various demands of a medical career. It is different in kind from the college training and it needs supplementing before the technical studies of the medical curriculum are begun.

It is not desirable that every individual in all walks of life should have a college education. "Like all other human institutions the American college is full of imperfections. But out of the thousands who have had the opportunity of a college course a very large proportion have derived from it something that they have prized as an invaluable possession to themselves, and something that has supplied to the country an element without which American life would have been immeasurably poorer." It is difficult to define accurately just what is gained. It is not alone knowledge, but knowledge combined with discrimination, judgment, poise and power, elements which are of the highest value in the daily routine of the medical practitioner.

A college training gives the student a breadth of view not obtainable in any other way. "The humanities and the sciences, in their fundamental principles at least, afford him a sure and safe foundation on which he can erect the professional superstructure. His mathematical studies give an idea of the necessity of exactness and fitness of proportion, and, as he builds, his general studies, history, literature, political economy, psychology, etc., supply the windows from which he can look out over the wide realm of human experience."

These are the things that train a man for the non-technical side of his professional calling. Yet more pertinent is the immediate aid that carefully selected college work gives the student in the technical part of his career.

Medicine is no longer an art but has become a science. It is more and more coming to be applied biology, chemistry, physics and psychology. It is evident that one cannot appreciate the application without a fundamental knowledge of the sciences themselves. Each is an intricate science, and in their interrelations as seen in medicine, there is yet more intricacy. Sufficient knowledge of these cannot be gained by reading alone, nor can they properly be mastered coincidentally. Biology being the more complex must follow, at least an elementary, knowledge of physics and chemistry.

The high school teaching of these subjects must needs be extremely elementary and superficial, and is by no means adequate as a preparation for the studies of the medical curriculum. Nor can the medical school give these preparatory subjects properly and in logical order. Certain medical schools attempt to do this but the result is unsatisfactory. The proper studies of the medical curriculum are pressing, and therefore the instruction in these fundamental subjects is foreshortened, with disaster both to the subjects themselves and to the medical work based upon them. Furthermore if these subjects occupy a third or a half of the first medical year, it deprives the student of that much time—all too brief at most—which should be devoted to the real medical studies. Hence the student who goes directly from the high school to the medical school, not only loses 20% of the time he should give to medical studies but he must be satisfied with extremely inadequate training, and often none at all, in physics, inorganic chemistry, invertebrate and vertebrate zoology, botany, German and French, all so essential as a groundwork upon which to base his medical studies.

His lesser maturity and undeveloped capacities enable him, in the four years in medical school, to gain only a part of what he might have gained had his preparation been adequate. In short the high school graduate is not properly trained to get the most out of a medical course of study.

Nor can a proper medical course now be given to the high school graduate. The rapid advances in medical science in the past decade necessitate a continual increase in the amount and scope of work given in the medical course if the student is to gain the modern points of view and appreciate the many valuable discoveries of recent years.

Aside from the more limited capacity of the high school graduate as compared with the college graduate and aside from the fact that his training is inadequate to allow him to carry the medical studies in the way they should be taught, the major part of the first year in a school that admits high school graduates must be employed in an attempt to supply a semblance of that fundamental training which is lacking. The result is that much that should be taught, both of the preliminary subjects and of the medical studies, must be omitted and the real medical course is reduced practically to three years.

A full four years is needed for the medical studies, without consuming time and energy in doing the preliminary work. This view has become a truism and it is now generally recognized that at least two years of selected college work is essential before entering the medical school. Many educational authorities might be quoted on this point in addition to the few noted,* but the fact that 26 medical schools now require at least two years of college work for entrance is a more forcible argument; for this

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*"To get men competent to take that sort of training is the problem of today—how to get men prepared to take the only kind of training fit to produce a physician or surgeon. The experience of Harvard Medical School shows conclusively that you cannot get that sort of training by high school graduation."—Dr C. W. Eliot, ex-President Harvard University.

"It is generally conceded that a scientific training in physics, chemistry and biology constitutes an almost indispensable preliminary for the study of medicine. As our present educational system stands, it is practically impossible for the student to obtain this equipment short of two years represents, not the opinions of a few individuals, but the deliberate conviction of that number of faculties and that number of Boards of Trustees. These 26 institutions (Hopkins, Harvard, Western Reserve, Cornell, Chicago, Wake Forest, Leland Stanford, Yale, Drake, Dartmouth, Columbia, Syracuse, Pennsylvania and the State Universities of California, Minnesota, North Dakota, Wisconsin, Kansas, Michigan, Nebraska, South Dakota, Colorado, Indiana, Iowa, Missouri and Utah) include all of the strong medical schools of the country. In addition to these there are 18 schools that require one year of college work. In many cases this one year requirement is but an intermediate step to a two or three year requirement already announced. There are therefore now 44 schools from which the man with only a high school education is excluded. These include all the State universities of the west and north that have medical departments.

It is clear that educators and university authorities and the various State departments of education are united in the opinion that a proper medical training cannot be given based on high school graduation alone. The corollary is that the high school graduate cannot get a good medical education—whatever his apparent individual capacity—since he is excluded from all the good medical schools of the country. Therefore, if he insists on going directly to the medical school without further preparation, he must resort to third or fourth rate schools and must be content with what they may give him.

"It has become apparent, by slow degrees, that light weights and cheap adulterations do not pay in education any more than they pay in trade." These lower grade schools no longer draw students who have thought out the matter carefully and their clientele will steadily diminish to the disappearing point; but unfortunately in the few years before this happens, a considerable number of boys will enter them without appreciating the blunder

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of college study."—Dr H. S. Pritchett, President of Carnegie Foundation for the Advancement of Teaching.

"The important point is that both these organizations (National Association of State Universities and Association of American Universities), which include all the leading universities of the country, demand that at least two years shall be spent on a liberal education before undertaking professional education or specializing with a view to it. I am myself in hearty accord with this program."—Dr. J. G. Schurmann, President Cornell University.

"I am heartily in favor of the six-year medical course, that is two years of college work as a preparation for the four years of medical work."—Dr Cyrus Northrup, President University of Minnesota.

they are making. It is with the hope that a few boys may see the problem as it is, that this article is written.

When the student shall have completed his inadequate course in one of these low grade schools he goes into practise in competition with men trained in the good schools. Such men not only have greater individual ability because of their better preliminary education, but they also have a far better medical training. The proportion of these better men will increase as years go on, and therefore the high school graduate, with his inferior medical training, enters his profession with a very serious handicap as regards his competitors. In some instances individual genius may, in a measure, overcome this handicap, but in the long run and on the average his chance of success is not great. And if a man have individual genius, how much greater would be his success with an adequate training.

A very potent argument for college training in preparation for medicine is that the man without it is limited in the geographical sphere of his practise. The States of Minnesota, North Dakota, South Dakota, Colorado, Kansas, Indiana and Connecticut will not permit men now (1910) beginning the study of medicine with only a high school education, to enter their boundaries for practise. To this list other States will be added each year. The student may think now that he will not wish to enter any of these States, but unforeseen conditions may bring a situation where he will desire to enter one of them, and he will find the way closed because he has not had the foresight to get a better preliminary training. The short cut which he has taken ends against a blind wall. He had far better have kept to the regular highway.

The doctrine that completion of a high school course is sufficient for entrance upon the study of medicine is not without its advocates. Their arguments in support of this contention are chiefly as follows:

(1) Many successful medical men have had no more nor even as much preliminary education.

This is true as a fact, but as an argument it is fallacious. If an individual follows one course it is entirely impossible to prove exactly what would have happened if he had followed another. Of course, there are individual instances of eminent success with meagre facilities, but it is not unfair to assume that these successful individuals would have had a yet greater measure of success if they had enjoyed the advantage of better preparation. No one wishes that his opportunities had been less and the average man feels he could have done better with greater facilities.

Furthermore, conditions in medical education have vastly changed in the past 20 years. Up to 1893 a high school graduate could enter any medical school in the country. Therefore he had access to the best medical training extant. Today he is excluded from all the good schools, and however great his individual genius he has not access to a good medical training.

Again, the content of the medical curriculum of today is vastly more difficult than when these successful men graduated. The advance in medical science makes far greater demands upon the student of 1910 in training, in capacity and in knowledge than it did on the student of 1890. If the student of today is satisfied with the 1890 or 1880 sort of medical education, the high school education is possibly sufficient and he can get the medical training of a quarter century ago in exactly those schools that will admit him.

(2) The second argument is that success in the medical profession depends on the individual and that what he gets from the medical course doesn't amount to much anyway.

This reactionary argument seems hardly worth analyzing. Granted the power of the personal equation, yet one cannot get the facts of medical science by simply being individually brilliant. The vast field of medicine must be properly presented to the student. He cannot acquire modern medicine from his practise. To present the many phases of medical knowledge is the function of the good medical school and nowhere else can a man get it in one lifetime.

(3) Another argument is that the length of training is too great if a man interpolates part or all of a college course between his high school and medical school, and that he enters his profession too late in life.

Success is measured not by years, but by achievement. The boy graduating from high school at 18 and going directly into medical school will enter practise at 22 or 23. If he spends three or four years in college, the entrance into practise will be at 25 or 26. At 22 the expectation of life is about 40 years. At 25 it is 38 years. Given two men with equal individual capacity at 18 years of age—will the man with the mental power gained by preliminary college work, and the much better medical work which this will enable him to do and the better medical school which he will be permitted to enter by reason of his better preparation, accomplish more or less in 38 years than the high school man, with the handicap of the limited development of his powers and with the second-rate medical training, will accomplish in 40 years?

I believe medical men will concede that on the average the man with adequate preliminary education and trained in a better medical school acquires an efficiency which is far more than 10% greater than that of the man with a high school education only, and a medical training from one of the schools which admits high school men. In the initial years, this excess of efficiency is nearer 25%. The man with the better training will, in 10 years, more than overtake the high school man. Before he is 35 he will have outstripped him and he will continue to advance in his maturer years. The total efficiency of his career is certainly greater than that of the man who was satisfied with mediocre training. "It is fairly certain that time spent in wisely ordered preparation is never wasted" and "it is true that the best training possible is the best of professional capital."

(4) Again it is said that the medical schools that accept high school men teach "practical medicine" as distinguished from the scientific medicine taught by the university schools.

This fallacious argument is an old one. It is an excuse rather than an argument. I cannot do better than to quote from an eminent educator who has been teaching medical students for over 30 years. Dr C. S. Minot of the Harvard Medical School in a recent address said:—"It is evident that a scientific training is indispensable to produce physicians psychologically fit. One still sometimes hears the distinction drawn between the 'practical' and the 'scientific' doctor; so far as I know, the most important difference between a 'practical' doctor and the truly scientific is that the patients of the former are the more likely to die. Yet, of course, practical experience is of the utmost professional importance. Medicine is one application—only one of many—of biologic knowledge to practical needs, and the practical technic of the application must be mastered. There are useful practitioners of medicine whose utility is founded on their practical experience, but I had rather entrust myself to the care of one who had, in addition to a practical technical mastery, a mind educated to observe with scientific accuracy and reason with scientific precision. Those who extol the practical man and decry the scientific are of the sort who would rank plumbers above engineers."

Modern medicine is based upon fact rather than theory. It is becoming less and less an art and more and more a logical science. It consists of knowledge of facts and their relations that may be used in the prevention and cure of disease. Speculation has given way to scientific demonstration, dogma to exact observation in the laboratory and at the bedside: and thus the scientific concept must precede the application. This is the present situation. How much greater will be the influence of science in the future we can only conjecture. It certainly will not be less. The student now entering the study of medicine is preparing for the future not for the past.

(5) Another argument often offered is that the requirement of college work for entrance to the medical school prohibits the poor boy from entering the profession since he can afford neither time nor money for so long training.

"This statement resolves itself simply into the question of who shall undergo the hardship, the individual or the public? We do not question the justice of preventing men from obtaining material advantages under false pretenses; should we adopt any different standards when the health and lives of a community are at stake, and allow the unqualified and inefficient man to pretend that he is qualified to bear responsibilities when it is self-evident that he is not? There is nothing mysterious or anomalous about medical education. To train a man to be competent in this work the same methods are necessary as in the training for any other work that is highly specialized. It takes time and painstaking care at every point."

The cost of the actual medical course is little more in the good medical school than in the poor one. If we remember that a "cheap" article is dear at any price, and that in the university medical school the expenditure upon each student is far in excess of the tuition, while in the proprietary school it is usually much less, then it appears that as a financial investment the low grade medical course is not profitable. The real question is, whether a boy can afford in the long run to take the short course, which appears immediately less expensive, but in reality is an unsafe investment. He is putting in his life as capital and the return on this investment after proper training will much more than offset the additional initial effort and expense in getting the essential preparation. "The truth is that the poor boy has no right to enter the profession unless he is ready to make the sacrifices necessary for the right preparation."

(6) A favorite argument is that higher entrance requirements will reduce the output of physicians until there is a scarcity, especially in the less densely populated districts.

It will be a great benefit to the country to bring about a scarcity of the type of physician that is turned out by some of the factors that advance this argument. This is one of the standbys of the low grade school as an excuse for its existence.

What is needed is not more physicians but better trained and thoroughly competent ones. The recent report of the Carnegie Foundation for the Advancement of Teaching shows that there is in the United States at present one physician to every 568 people. Judging from other parts of the civilized world a ratio of 1 to 1500 or 1200 is adequate.

We thus have two or three times the necessary ratio. This condition of overproduction has arisen from several factors, but the chief factor has been the low grade medical school that has tried to induce boys to study medicine by alluring statements of the emoluments to be derived. This propaganda is going out of fashion except in the case of the sectarian schools. To read their advertisements and catalogs, one who is inexperienced is lead to believe that the practise of medicine—of the particular cult advocated—is a veritable Eldorado; and they make the entrance extremely easy.

At the present time, medical men are nearly unanimous in agreeing that there is no demand for men to enter the profession unless they be men who are capable and well trained. "Medicine is a profession which only men of exceptional ability should enter. Men of moderate gifts should seek other occupations. In the future, as medical knowledge becomes still more vast, high ability will be indispensable to those who try to master and apply it."

There is room in the profession for the well trained able man, but none for the poorly trained man and if a man cannot get the best training it is better for himself, for the profession and for the laity that he go into some other field. The consensus of opinion after all the discussion of the past 10 years on the various phases of medical education is that high school education alone is not enough preparation to enable a student to get a medical education that is efficient and adequate, and that, if a boy is absolutely prevented from further preparation, he had best not attempt to enter the profession by the back door of the low grade school for his hope of a successful career following such a training will probably never be realized. Under these circumstances, it is to his own advantage to seek some other field of effort.

Professional Duty.

By JOHN G. SPENZER, M. D., Cleveland.

Mr. Chairman, Ladies and Gentlemen, and Members of the Graduating Class:

To me has been assigned the duty of addressing you on behalf of the faculty. I appreciate the honor, but feel unequal to the task, in view of the past masterpieces of oratory and good advice which have been presented on like occasions to preceding classes, by men eminent in the ministry, the law and medicine.

Beginning four years ago, with a hazy idea of your duties, you have advanced slowly, at first uncertainly, but steadily plodding with commendable patience through the maze of theories and facts of that group of scientific studies on which rests the foundation of the great art of medicine, you were, thus early, made to see the importance of your life calling as a continuous series of experimental investigations.

If one would cultivate this spirit of scientific research, whether influenced by the purely materialistical view, in which the welfare, comfort and happiness of his fellow man is concerned or the prestige of his country is affected, he must ever keep in mind the intellectual results of labor along these lines. For naturally the intellectual condition of man is directly influenced by, and proportionate to, research in any direction. The mind of the individual cannot carry him much in advance of his accumulated knowledge of facts, either personally observed, or otherwise acquired. Intellectual gains have been made only through discoveries, and these latter only through investigation. The well read man is he who has accumulated many facts understandingly, and if these facts have been reinforced through experiment, his knowledge is more complete. Still this learned man may be very inefficient. While he may have assimilated much knowledge, has he used it well? Have the intellectual results

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Address to the Graduating Class Cleveland College of Physicians and Surgeons, Medical Department of The Ohio Wesleyan University, June 1, 1910.

of his scientific investigations been properly applied? A moneyed man may be a miser or he may be very efficient in the development of the commerce or arts of his neighborhood or his nation.

The scientific method is applicable to all kinds of intellectual problems, and it is necessary of adoption to further the intellectual advancement of a people. As the intellectual state is a direct result of scientific investigation, it is self-evident that the nation which adopts the scientific method will eventually outstrip the one which does not.

Absolute loyalty and perfect honesty are essential to scientific progress, but the ethical results of scientific investigation are doubtful. Its sole object is to learn the facts, and to be guided accordingly. Constant scientific application must leave its indelible impress on him who uses it well, and the life so spent is one of a high order. Up to a quarter of a century ago fitful, unrecognized and unappreciated work had been done in this country, but since then, under the influence of the European scientific men, we have gone forward rapidly and well. Once under the fascination of experimentation, the attachment tightens, and the investigator becomes a disciple of science.

It is often supposed that a large expenditure is a natural accompaniment of research. This is not always true, although money is a desirable perquisite. The classic researches of Scheele were made with the meager facilities of a Swedish apothecary, still he attracted the attention of the chemical scientific world of 150 years ago. The same was true of J. Marion Sims of this country in surgery.

For valuable investigations it is found necessary to have the ideas, the time, the energy, the patience and experience. The first of these is, we believe, indisputably the greater, although there is much in the research atmosphere, environment and association playing an important part. How valuable and inspiring are the meetings of the natural science and medical societies of every German university. There is no age limit, the young and smooth-faced may have ideas, and information, the equivalent or even superior to that of the bald-head or grey-beard, and why not, for the arteries are not yet stiffened and the blood supply to the brain is at its best. Until one has a connected chain of ideas these must be furnished by others, consequently one is inclined to repeat work already done, attempting to corroborate or disprove the labors of his predecessors. In doing so, like all novices, he often criticises too hastily or too harshly. It were better for him and for research if he were more charitable and more reserved. The school boy is likely to refer to able and meritorious endeavor as nonsensical and ridiculous, while the experienced investigator trained to analyze may frankly confess that he cannot intelligently understand it even after considerable study.

Some demand immediate practical results from scientific research. This is of course a desideratum but not a necessity. You cannot hold the investigator down to such fast rules, since much work, for the time being apparently useless, may prove of great value in the future. The research investigator is open, frank, and prodigal of his knowledge. He cannot hoard it up in secrecy, his information is, and must be, yours and every one's. He may be poor, and continue to be so, dying frequently intestate. It may be necessary for him to live frugally, sacrificing comfort and luxury for truth and knowledge, all of which might be different if the same zeal were applied in commercial channels. Pleased at a cordial recognition of his work, he is still not open to your pity or sympathy, for he is made of sterner stuff. He will continue to investigate in spite of oppression, interference or sorrow. Woehler was crushed by the death of his wife, but fought on. Graefe worked 20 hours a day. Bichat died for anatomy, and Hoppe-Seyler for medical chemistry. Yes I might go on, their number is legion, the records of the laboratories, hospitals and battlefields of the world offer mute but graphic testimony for these men, who faced the most terrible of dangers knowingly, but who knew no fear, when led by the gentle handmaid of nature, heroes in every sense of the word, as brave as Napoleon's Marshall Ney, "the bravest of the brave," who when about to be shot for treason, although pinioned, would not permit his eyes to be blindfolded, but faced the soldiers with the calm request, "Soldats viza ma coeur." And why this courageous sacrifice to save the baby, and help men? Spread forth creation like a map, bid earth's dead multitude revive, and of all the pageant splendors that ever glistened in the sun, when beheld his face an array of men, greater for constancy of devotion to professional duty than these? And whether they rest in peace grouped together in the beautiful "Cemetiere Pere La Chaise" in Paris, or repose isolated and neglected in out of the way places, the ravages of storm and time can never remove them from history, as they remain safe and sure. It was in this spirit of research, and of its application to practical medicine and surgery, that this college was founded. The institution which will soon graduate you, is almost fifty years old. In 1863 its faculty, assembled by Weber, the real Nestor of medical education, in Cleveland, was one which left an undying influence for such research throughout the land, by years of faithful service which these men gave to its cause. The zeal and devotion of this and succeeding faculties, including the present and last one, their sacrifices, their skill as practitioners, and as teachers, should serve as an inspiration to you, as you assume the duties and responsibilities of your profession. This occasion should appeal to you as the first great epoch in your young lives, about to step out independently in a work where brain, physique, energy and zeal can be utilized to the greatest degree. Your training from the first has been careful and select, with all recognized scientific aids to lead; while you, responding with a will, accepted patiently all that has been offered.

You are about to enter a stern life race. Use the system, method, and the same patience which you have shown in the past, your judgment then will be better, your mistakes fewer. Study to advance, keep busy, have a hobby, don't be peevish, feel for the sick, make allowances for their anxieties, uphold the laws, be just to yourself by conscientious endeavor, save in your best earning years, use your abilities to their best. Value progress in everything and partake of the bounteous stores of knowledge and truth which it offers. As practical men and women, you should not feel willing to accept all the new theories offered without submitting them to a careful rigid examination, and thereby employ only that which is sound, rational and useful. Although we note with interest the sharp battle waged by science against superstition and empiricism, antagonizing and overthrowing the old to furnish the newer ones, we should not, however, allow this contest to assume the attitude of an unrestrained fever of progression. As practitioners of medicine it is your duty to guard against such uncertainties and mistaken conceptions, likely to arise in studying the results of the more recent scientific methods of investigation. We indeed believe it a great wrong to confidently build castles in the air, and in an imaginative state await with hopes that which can only result in calamitous error.

The learned builds himself according to the school and can be at most only one of its preferred spirits, attempting to solve the secrets of nature with the requisite calmness and forethought, to separate the true from the false progress, or the advancement based on facts, and that of the mazy kind. False progress is illustrated each time a new theory is presented and recklessly ridden to death. You all know the fate of Brown Sequard's treatment, and Koch's tuberculin, in which an unrestrained enthusiasm served to discredit facts, but as you know, Koch was greater than his critics and the tuberculin test for consumption is one of the strongest weapons against the White Plague when properly used by the intelligent physician. The public has little conception of the labor attached to medical matters, the mere fact that Emil Fisher has devoted 30 years of his life, assisted by a host of the brightest young men of the world, in his attempt at determining the protein molecule, and feels its solution is in sight, while on the contrary the great physiologist Pflueger, recently dead, said among his last words, with all honor for Fisher's beautiful work, that it was not to be anticipated for a century.

Therefore, without a mutual control furnished by the exact sciences and proper experimentation up to an unassailable proof of a new hypothesis, medicine will remain either empiric or hypothetic in its progress.

You are to be congratulated on the fact that your preparation was laid at the present time. We know how much better it is than it would have been if made 25 or 50 years ago. Your success in medicine lies almost entirely with yourself. To acquire a large practise, and thereby a comfortable competence for old age, is assured all if you are temperamentally right; but no great wealth can be expected from your profession. Read much, think deeply, associate yourself with medical societies, write and read papers before them, connect yourselves with hospitals and colleges, in even a small capacity, make every day's work count, try to be the best doctor in your community, if this is impossible be among the best in both character and reputation. In conclusion, I hope each and every one of you will have enough staying power to finish a long and prosperous life of good professional labor; many kind and appreciative friends; and in the twilight of your days rest in contentment, with a crown of well earned and glorious success.

420 Rose Bldg.

Traumatic Insanity with Illustrative Cases.

By H. H. DRYSDALE, M. D., Cleveland.

Traumatic insanity, so called, receives but scant consideration in modern textbooks on psychiatry. This is unquestionably due to the fact that a wide diversity of opinion surrounds the subject. Many of the older alienists contend that there is no true scientific basis for the use of the term, that there is nothing specific in the effect of trauma but that it acts merely as a provocative factor, precipitating, or bringing to the surface, a slumbering psychosis. They advance the hypothesis that the condition is rare, that it very seldom follows severe operations on the brain, that it lacks nosological individuality and that there may be terrible head injuries with considerable destruction of cortical substance, without temporary, consecutive or remote mental manifestations and that in those cases which appear to follow slight, or inconsequential head injuries, the subject must have had a lessened or vitiated potentiality, and that the mishap was simply an accidental cause. But while there is much truth in the argument just advanced, competent observers are agreed that trauma capitis does, in various ways, disrupt the integrity of the brain and induce mental derangement in those of average health and strength. The leading authorities today, are at least willing to accept the term "traumatic insanity" as a genetic one.

The question of the frequency of the disorder is difficult to establish. American statistics are very incomplete, but such as they are, they would indicate that insanity of traumatic origin comprises not more than 1½% of the patient population of our State hospitals. Adolph Meyer in a careful study of some 5,000 severe head injuries could find no more than 23 cases which resulted in a condition that could be regarded as insanity. In the Franco-Prussian war, out of 8,955 head injuries, only 13 led to insanity. In the past I believe that physicians have been inclined to overestimate the effect of trauma as a cause of mind disease and it is undoubtedly true that many conditions so classified have had their origin in other causes. Friends and relatives are only too eager to place the blame of a developing psychosis at the door of some trivial injury sustained years before rather than to admit the existence of an inherited nervous or mental defect in their family history. The occipital protuberance, should it be at

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all prominent, is very likely to receive the brunt of these accusations. People fail to remember that few persons during their life-time have escaped cranial injuries of more or less severity. Not very long ago I was asked to counsel with a local celebrity known for his bone-setting adroitness, in regard to a patient suffering from dementia praecox depression, on the supposition that her psychic affliction was the result of a fall on the back which she received when a child.

During the last eight years I have had the opportunity of observing seven cases of so-called traumatic insanity, and I have chosen three of the more important ones to constitute the subject of this thesis.

Observation 1. A. E., aet 51, German, married, was employed in a manufacturing plant in a small town and resided with his family on a small farm nearby. He is a man of excellent muscular development and has always been well and strong. His employers describe him as a faithful, industrious workman, of even temperament. With the exception of an occasional glass of beer his habits were correct. His family history is psychopathic. His father was an alcoholic and his only sister suffered from recurrent melancholia. This patient denied having had gonorrhea or syphilis.

In July, 1904, he was working in the loft of his barn and accidentally fell about 10 feet, off a pile of hay, forcibly striking his head against an oak peg which was utilized as a harness-hook. For a moment he was stunned but continued with his work for an hour or two. A large swelling gradually developed on the right side of his head, directly over the right ear. The following morning his physician, who was summoned, prescribed cold applications and stated that no fracture of the skull had occurred. Patient slowly recovered from the effects of the external bruise but tenderness and severe pain over the injury continued, and greatly annoyed him. Shortly, a decided change in his disposition and personality was observed. From a cheerful, gentle, and affable man he became indifferent, hateful, depressed and hard to please. He was also subject to violent accessions of unprovoked anger and during these explosive episodes would frequently leave his home and return beastly intoxicated. At one time he placed in his cellar a large barrel of cider, of which he would drink freely when these spells possessed him. He would impulsively, and without cause, order the farmhands off his place and more than once cruelly abused his horses and also shot at and wounded cattle and other stock, belonging to his neighbors, that happened to wander on his premises. At the factory he also had trouble and in a fit of rage viciously threw a heavy hammer at his helper, inflicting a painful wound in his back. One morning when angry, he pulled all the washing off the clothes-line and confined it to the cistern and he has broken dishes and other household articles. In due time he became suspicious and finally developed delusions of infidelity directed towards his wife, whom he accused of being intimate with her son-in-law. He would watch her from the window in the barn and would openly charge her with improper conduct in the presence of his children. His wife, it may be said, was a highly respectable, hard-working woman and the son-in-law is known to be a straightforward and reliable young man.

In June, 1906, the patient in a violent outbreak, suddenly left his home and despite the fact that he had a substantial bank account walked all the way to his brother's home in central Michigan. In three weeks he returned, reaching his home at two in the morning. He knocked at the door and because it was not instantly opened, broke in, and started to search the rooms and under the beds for the subject of his delusive ideas. He also threatened his wife and children who, he asserted, had entered into a conspiracy against him. The family being of the opinion that they could control him refused to have him committed to a suitable institution.

On July 7, 1906, he was examined and found to be intensely emotional. He cried a great deal and was profoundly depressed. Said his wife was untrue to him and that his family were planning to deprive him of his property. He was positive of this but was very sorry he had threatened them and further stated that if he had injured any one, he immediately would have suicided. He could not help himself, he said, and when the pains in his head were severe he was driven to despair and lost his control.

Physically he appeared to be in good health and no sign or evidence of organic nervous disease was elicited. Directly over the right parietal region there was a slight depression, or furrow, which he claimed was extremely tender and at times painful. For this reason it was thought advisable to have the region surgically explored. Dr C. B. Parker opened the skull at this point but found nothing abnormal or indicative of previous fracture. In two weeks patient left the hospital very much better and of the impression that his pains would never return. For two months he enjoyed excellent health, worked steadily on the farm and had satisfactory mental poise. Suddenly, however, like a thunderbolt out of a clear sky he became boisterously excited, accused his wife of entertaining other men during his absence in the fields and threatened the lives of the entire family. He could not be pacified, walked the floor most of the night and kept on his dresser a loaded revolver which he defied anyone to touch.

A second examination was made at this time and the patient was found as formerly, very emotional, agitated and controlled by definite delusions of infidelity and persecution. In November he was committed to the State hospital and soon became quiet and self-composed. He still suffers, however, from recurrent pains in his head and when his relatives visit him his delusive ideas come into prominence with all their former intensity. He is at present under treatment and little, if any change has been noted in his mental condition.

Summary: Family history psychopathically tainted, cranial injury (over right parietal) in 1904, no fracture, examined operatively, recurrent pains over seat of injury, changed personality, explosive outbreaks, a typical paranoic symptom-complex. No improvement 1909.

Observation 2. J. E. G., aet 22, single, student, born in Cleveland of English parentage. He suffered the usual diseases of infancy and had typhoid fever at the age of 14 from which he entirely recovered. He is a well-developed young man, of good habits, and never presented symptoms indicative of an unstable neural organization. At school he was considered bright and took an active part in athletics. His family history throws no light on his mental condition. He comes from sturdy stock, his four grandparents being still alive and in good health.

On July 9, 1909, this patient fell out of a small tree in his neighbor's yard and struck his head against the iron handle of a wheelbarrow. He was stunned and it was said that he walked aimlessly about in a circle and did not seem to know what he was doing. He was taken home and placed on a couch but was unable to tell his mother what had happened to him, other than to point to his head which he buried in his hands. Ice applications were applied and he apparently fell asleep. In a short time he was missed and could not be found. That night it appears he approached a policeman on Superior avenue and asked for protection stating that he had committed murder in New York and that the United States Army was after him. He was taken to the precinct station, where he told the officials that he was a draftsman from Pittsburg. He was placed in safe-keeping and during the night was noisy, restless, did not sleep and destroyed most of his clothing. At times he was boisterously disturbed and it was difficult to restrain him.

At the investigation next day, I found him quiet but exceedingly confused. The physical examination was essentially negative. The pupils, however, were widely dilated but responded actively to light and distance. No evidence of fracture was discernible but directly over the left frontal area there was a moderately severe bruise with swelling and discoloration. He was markedly disorientated as to time, place, persons and surroundings. He did not know the day of the week, the month of the year, his age, where he lived nor where he was at that time. He called the court-room the house of parliament and later on told us that he lived in Cincinnati and hoped that God would forgive him as he did not mean to kill the girl. He was depressed and apprehensive and every sound or movement greatly frightened him.

Pending arrangements to discover his identity, if possible, this young man was detained in the county jail. At three o'clock his father, who had been searching for him in the meantime, appeared on the scene and was admitted. Patient was unmoved at the sight of his father whom he at once accused of being an electrician or electrocutioner, said he was not his father as his father was a minister and lived in Allegheny. This interview greatly excited the patient and the father withdrew. In the evening both parents visited him with the same unsatisfactory result. Nothing they could say or do would interest him. In fact their coming tended to irritate and confuse him. That night he was given a sedative and rested well. In the morning he was very much brighter but still disorientated and suspicious. When I called he remarked that he had seen me before but where he did not know. He called me Mr. Hamilton. I endeavored to convince him that he was a Cleveland boy but this he positively denied. To my astonishment, however, he handed me a card which he had removed from the inside of his hat, and on it was printed his correct name and street address. Instantly he lapsed into a depressed and confused state, denied having given me his card and began to cry.

The parents being present and noting the improvement decided to take him home and place him in the care of a male nurse. This was done and I saw him regularly during the subsequent nine weeks. While he had intervals of normal mentality and was, on the whole, more easily controlled, there persisted a haziness and a pronounced tendency to fabrication. He had an extremely poor grasp of facts, would contradict his parents on matters pertaining to athletics, for instance, and the very next day flatly deny having ever discussed them. He was variable in his moods and was subject to periods of intense depression. At other times he would appear restless, apprehensive and impulsive. During the entire period he had complete amnesia for the accident and the acute events which followed. His faculty of calculation was also disturbed, he misspelled simple words and frequently left sentences incomplete.

Thinking that a change of environment might prove beneficial he was taken to his uncle's farm in the central part of the State and to our gratification, at once became interested in rural life. He slept better and acquired a ravenous appetite. At first he was kept very quiet and was not permitted to do any heavy work or engage in any prolonged mental effort. He wrote to his parents every week and in the beginning his letters were characterized by the wildest confabulations and incoherency. Little by little they improved and at present his communications would be considered logical and correct. Today he is very much better, is thoroughly contented and is making himself useful on the farm. His last letter expressed great affection for his parents, something he has not shown since the accident. His father has recently told me that the patient is still very excitable and easily frightened but that he is rapidly getting well and has gained 20 pounds in weight.

From present indications I am rather inclined to believe that this young man will gradually regain his former mental strength and vigor.

Summary: Excellent family history, cranial injury (over left frontal lobe), acute excitement, unsystematized delusions, confabulation, confusion, memory defect, no hallucinosis. Primary traumatic insanity. Final outcome not yet known.

Observation 3. Jno. B. aet 57, German, married, had two children. He has been a hardworking man and for the past 30 years was employed as a teamster. He was a moderate drinker of beer but was never intoxicated. Syphilis and gonorrhea are denied. His ancestral history is free from neuropathic or psychopathic taint. On November 6, 1906, this man was driving his team with a load of lumber, across the Erie Railroad tracks, on Broadway. The gates were up and a switch engine moving at the rate of 18 miles an hour, struck his wagon demolishing it and patient was thrown into the air. Eye witnesses state that he landed on his head with great force. He was picked up unconscious and taken to the Huron Rd. Hospital where Dr H. L. Frost found him in a comatose state with a large hematoma at the base of the skull. There was evidence that he had bled from the nose, mouth and ears, and it was thought that a fracture had occurred. He remained in deep coma seven days and as consciousness returned he became resistive, unruly and on one occasion viciously attacked the nurse who attempted to administer a hypodermic. On his return home, 14 days after the mishap, he seemed confused, was indifferent to his surroundings, and did not sleep well. The family was greatly concerned over the great change that had taken place. From a former jovial, easy-going, kind and considerate father he was now hateful and easily provoked. He wanted to be left alone and would not voluntarily engage in conversation. The slightest noise seemed to irritate him and he complained of swimming sensations in his head. One day he talked incessantly about horses and on the advice of his physician, his employers permitted him to return to the lumber-yard and have his old team again. This was about 10 weeks after the accident.

Everything was done to humor the old man and they allowed him to take up the work to which he was previously accustomed, but this he did in an awkward manner and made the most incredible blunders. It seemed hard for him to think and he frequently got confused. If anyone would interfere with his team or harness he would lose his control and resort to threatening language. During all of this time he was at the lumber-yard every day, and when permitted to have his own way got along very well.

In February, 1908, his guardian filed suit in the United States District Court against the Erie Railway Company, for damages and was awarded $8,000.00. This verdict, however, was reversed by the United States Circuit Court of Appeals on some legal technicality, and it was sent back for new trial.

On January 16, 1910, this patient came under my observation. I found him to be a man of good muscular development. His heart, lungs, and abdominal viscera were apparently normal. Blood pressure was 150 mm. and urinalysis negative. No objective neurological symptoms were observable. Both pupils were small but responded actively to light and distance. The lenses were slightly hazy, but practically normal for a man of his age. The opthalmoscopic picture was negative and no evidence of choked disc was discovered.

Mentally he was depressed, listless, indifferent and apathetic. His facial expression was one of sadness and despair. He sat down in one position with hands crossed and apparently unmindful of his surroundings. It was difficult to secure his attention, and more difficult to hold it. We could not arouse his interest, he did not want to talk and most of his answers were terse and irrelevant. I had him under my observation for almost a month and no change in his condition was noticed. I also visited him unexpectedly at his home one night with Dr Chas H. Clark. We found him lying on a couch and he displayed absolutely no concern at our coming. We asked for his latest photograph and were given one that was taken seven years ago, and this showed in a marked degree the great change that had taken place. We spoke to him about his accident but he denied all knowledge of it and said that he never was sick, and never was in a hospital. His memory was deficient for recent events but he remembered certain instances that happened when he was a boy. Finally he spoke about his deceased daughter, and how she often talked with him in the yard. That she was dressed in white, would say, "Hello, Pa", and fly away. He also had seen Christ and the angels. They would come down the chimney into the stove and greatly excite and frighten him. We left the patient in the same condition we had found him and it was our firm conviction that if he would open up his mind and reveal his innermost thoughts, many delusions and hallucinations would come into prominence. I had an opportunity to talk with his employer, who told me that the man was growing worse every day, especially in the last six months. That he had a weakened memory and did his work in a very clumsy manner. In some respects he was childish and acted with his horses like a boy with his first toy. The family informed us that it was almost impossible to get along with him and that he turned against them all with the exception of a little granddaughter who lived with them. During the past few months they had observed that he had lost his neatness, was very profane, would never take a bath unless compelled to and that he now soils his clothing and bed clothing.

At the second trial, February 16, 1910, a jury in the United States District Court awarded this man $7,000.00.

Summary: Negative family history, cranial injury (base) probably severe concussion with prolonged unconsciousness, changed personality, irritability, poverty of memory, delusive conceptions with hallucinations. Finally deterioration.

There is another type of cases which Pearce Bailey has aptly termed traumatic cerebrasthenia. A condition of mental invalidism, so to speak, which expresses itself in distressing headaches, dizziness, nerve-tire, retinal fatigue and muscular exhaustion. The subject suffers a change of personality with periods of depression. Many of these cases gradually progress along the road leading to actual insanity, or organic brain disease, and for this reason the physician should exercise great caution in expressing an early prognosis. The following case will emphasize this point:

M. S., aet 56, in January, 1908, was struck on the head by the falling gates at the Swiss Street crossing of the Nickel Plate Railway. He was removed to the hospital and remained in an unconscious condition for two days, during which time he was semidelirious and flighty. No symptoms of fracture of the skull developed and on the fifth day he was taken home. His recovery was tediously slow and he continued to suffer from peculiar sensations in his head. He lost his characteristic affable traits and became greatly depressed and unreasonable. In time he started to go to work but was obliged to surrender on account of his great weakness and lack of endurance. An examination was made at this time and as no objective manifestations were discernible, the condition was classified as probably cerebrasthenia.

One year afterward I again examined this man for his attorneys, who were about to institute suit for damages. At this time the pupils were discovered to be contracted, sluggish in reaction and irregular in shape. Dr Leo Wolfenstein applied a cycloplegic and was able to demonstrate a marked deformity of both pupils without any posterior synechiae. The condition was then reported as organic.

In January of this year (1910) I again saw this patient with Drs Geo. W. Crile and T. A. Burke, and in addition to the pupillary disorder, there was a marked disturbance of sensibility, the reflexes of both lower extremities were distinctly exaggerated, the gait was somewhat spastic and a complete Babinsky phenomenon prevailed. On the report of these findings, the railway company promptly settled this claim for $4,500.00.

The question is frequently asked in medicolegal controversies as to the effect of cranial injury upon the development of paresis (paralytic dementia). Of course it is almost impossible to definitely determine the exact part played by any exciting cause in a disease whose beginning is essentially unknown but inasmuch as we now have a better insight into the real pathology of the disease we can, I think, frankly assert that trauma capitis will hardly bring about the paralytic brain-changes without previous syphilis. On the other hand it must be admitted that traumatic interference with the brain has some influence—that it is recognized as an etiologic factor in most modern textbooks and that because the survivor of a severe head injury has had syphilis does not justify the claim that he would have developed paresis whether his head had been injured or not. Under these circumstances, a safe position to maintain would be that syphilis is an indispensable element in the etiology of general paresis and that severe head injuries by increasing the cerebral vulnerability are responsible for rousing a hitherto latent progressive paralysis to active manifestations. In several important opinions recently handed down by prominent jurists, this view has been taken.

Traumatism produces widely different results. In certain individuals certain slight head injuries may provoke grave and immediate mental disturbances, while in others violent and severe injuries may have little, if any, deleterious effect. Whether the skull is fractured or not, matters little, for as some one has well said, the seriousness of the condition is to be measured in terms of brain, not of bone. In this connection it is best to appreciate that the region of the cranium that receives the traumatic insult is not without influence. It has been noted that blows on the upper part of the occipital zone often cause cerebral symptoms. Phelps has clearly shown that lesions of the frontal lobes, particularly the left, are very apt to produce serious mental decadence. In cortical injuries we usually find poverty of memory, lack of attention, deficient control, incoherency of thought, stupor and delusions. Diffuse concussions and basal fractures most generally lead to initial delirium, intercurrent episodes of a more or less epileptiform or explosive character, also paranoic development.

While it is true that we cannot include "traumatic insanity" in our nomenclature—there are too many forms—nevertheless in a large number of cases certain distinctive features prevail which speak for trauma and which the experienced observer can usually detect. In other words, psychopathic conditions which bear the stamp of traumatic genesis, differ in many respects from the classical types of insanity, notwithstanding that they may have many symptoms in common.

In assuming the responsibility of testifying in court when traumatic insanity is an issue, it should be the solemn duty of the physician to withhold an opinion until the condition in question has been sufficently observed from every angle. Testimony expressed as the result of a single examination is usually unreliable and should be discredited.

The examiner should have for his consideration and guidance the full history of the accident, the immediate after-effects, the extent of the injury and the shock sustained. This information can generally be obtained from the hospital records or from the physician who had charge of the case.

Inquiry is necessary into the family history of the claimant, particularly as to alcoholism, syphilis, epilepsy, eccentricities, nervous and mental defects among the antecedents, descendants, or the collateral members of his family. Subsequently an inventory should be taken of the individual's mental equipment, his temperament, peculiarities, predispositions, school life, occupation, mode of living, environment, sexual life, habits, etc. When these factors have been fully determined a minute examination of his entire organism should follow, including a careful neurological, psychological and anthropological study of the case. Only in this way can the true condition be established and the physician who adopts a course of this kind will not often find himself in error.

821 Rose Bldg.

Scientific Research in State Institutions.

By CHAS. H. CLARK, M. D., Supt. Cleveland State Hospital.

The term scientific work is here used in its limited sense as applying to the clinical and laboratory methods regarded, in recent years, as necessary to the practise of medicine and the investigation of disease. Criticism has been made that hospitals for the insane have been deficient in the scientific spirit, which has pervaded the general hospitals for the bodily sick and injured. In a recent address to the American Neurological Association by its distinguished president the following criticism was made: "Amid enormous gains in our art, we have sadly to confess the absolute standstill of therapy of insanity and the relative failure, as concerns diagnosis in mental maladies, of even that most capable diagnostician, the postmortem surgeon, and the last forty years have at least taught us that the asylum is advisable only when poverty or extreme peril leaves no other resource." This same gentleman in an address a few years ago to the American Medico-Psychological Association, constituted largely of superintendents of institutions for the insane, accused the then asylums of being little else than immense caravansaries and their superintendents boarding-house keepers on a large scale.

Such criticisms have often had their value in pointing out the direction in which progress might be made, and so much attention has been given the subject by the State hospital superintendents in recent years that there has been a veritable renaissance of both ideals and methods of practise. Criticism has not always recognized the great humanity which has placed countless indigent insane patients under sanitary conditions. Statistics upon the number of indigent insane removed from improper surroundings to properly equipped hospitals during the last decade are wanting, but would undoubtedly show a record of philanthropy and humanity not in any way discreditable to the physicians engaged in this line of work. The splendid results in this direction may account for the apparent neglect in others, and it may with reason be claimed that technical scientific investigation can not well be undertaken until the housing and feeding of patients have been accomplished.

It is not to be expected that the modern insane hospital of several hundred patients is to spring into existence fully developed

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Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland ,January 7, 1910.

but rather that its best and most successful work will be that which results from a natural and orderly growth. If a superintendent had at all times sufficient funds at his disposal this growth would be hastened, but we, of necessity, are compelled to depend on the liberality of the General Assembly for funds, which are not always forthcoming, and hence we are delayed, from time to time, in taking an advanced step in the line of psychical research work.

After a thorough acquaintance with the State hospitals of Ohio ranging over a period of 16 years I feel that it is not an exaggeration to state that they are not excelled by any other State in the Union. Our institutions from a physical standpoint are all that could be hoped for; they are well-appointed, comfortable and homelike as is necessary, and economically managed. I can state without fear of contradiction that the Toledo State Hospital and Massillon State Hospital, which are institutions constructed upon the cottage plan, are considered to be the most modern hospitals for the insane in every respect in this country.

Granting then that our hospitals are sufficiently well-appointed to give the patients committed to them the proper care and treatment, we must acknowledge that there is a lack of concerted action along lines of scientific research, and unless we make use of the opportunities for technical observation and experiment, we will still continue to hear the criticism, that the Ohio State hospitals are only first-class boarding-houses. If we hope to maintain a position among the progressive institutions of this country it is high time that we shake off this indifference or lethargy and organize a department in connection with our hospitals which will unite them into a harmonious working union for more systematic scientific work.

The problems of insanity must be attacked from all quarters and not from any one direction, as is usually the case in our State pathological laboratories. This State should follow the example set by the State of New York, and create an institution for psychical research work by an act of the Legislature, and it is my opinion that such an institute should be located at some central point, the capital city for example, and in connection with the Ohio State University. The subject of insanity should be investigated from the pathological, chemical, anthropological, bacteriological, biological, and psychological standpoints. The necessity of approaching psychiatric problems from the different directions just indicated, is the only possible way to obtain results, which are of a scientific character, and such work could not or should not be expected from the general staff of our State hospitals.

The work of the assistant physicians is each year becoming more exacting and arduous, so that with the supervision of his service, which means the medical care of three or four hundred patients, seeing the patient's relatives, his letter-writing and his history-dictating; he is left little time and perhaps the time at his disposal is not properly distributed. He can never call an hour his own, and scientific work requires careful thought, free from interruptions. We need good physicians in our hospitals, who should devote their entire time to treating and ameliorating, through clinical studies, the welfare of the most difficult and trying subjects in all medicine, the unfortunate and dependent insane.

We ought, however, to acknowledge candidly that few, if any, can learn to accomplish the intricate duties of the treatment and welfare of the insane, grasp the clinical science of psychiatry, master in addition the details of other fields of scientific investigation of insanity, and keep abreast with the advances in all the stupendous side issues which such investigation must necessarily involve. It lies beyond any one man's capacity to master two or more provinces of science in these days of specialization. Therefore I believe that the scientific research department should be independent and separated from the ward service of the hospitals.

Turning now to the organization of research work in psychiatry we must emphatically point out the fact that scientific work along the old routine lines of one-sided investigation of insanity, would be nothing but a snare and delusion; it would be a loss of time and labor, it would be an utter failure, barren of scientific results.

The one-sided scientific investigation of insanity by the microscope alone is not liable to yield results which a comprehensive study is naturally bound to bring about. The general impression seems to be, not only among the laity but in the medical profession at large and even in that branch of it which deals with the insane, that all that is necessary for scientific investigation in unravelling the life-history of mental diseases is to bring into the asylum microscopes, certain complicated machinery for cutting thin slices of brains, an assemblage of anilin dyes to stain these slices, and a goodly assortment of various-sized bottles and jars for the preservation of the brains. This is a sadly mistaken notion of the way to investigate insanity. It has been done over and over again in our hospitals and the results toward advancing psychiatry are highly disappointing. The microscopic investigation of pathological specimens has its place, but it can do little more than contribute to the mechanical side of science.

To sum up the work in pathology, which has been done in the hospitals for the insane in this country, we find that the hospitals in comparatively few States are provided with pathologists; that, as a rule, the work of the pathologist is confined to routine work in the clinical pathology and in the autopsy room. What articles have been published have dealt mainly with statistics or with the elucidation of some problems previously studied by some European investigator, and along the same lines previously pursued. Although several of the laboratories promise to be productive of real scientific work, nothing, as yet, denoting marked originality of thought or thoroughness of work has emanated from the laboratories of our State hospitals. This is apparently a pessimistic view of the subject, but, nevertheless, a true one. Each State hospital should have its own laboratory sufficiently well-appointed and equipped to aid the physicians in their clinical work, such as by the examination of sputum, urine, blood, stomach-contents, etc., thereby supplying the indispensable methods for the scientific diagnosis of intercurrent diseases, which our patients at all times are liable to develop.

What is true of the one-sided investigation of the pathology of insanity would be equally true if the research work was confined entirely to the subject of bacteriology or physiological chemistry or biology or pathopsychology. We must have a grouping or correlation of these sciences in order to have a comprehensive study of insanity.

The investigation of insanity must be unshackled from the narrow, circumscribed conceptions which have so long governed it; and it must be freed from the confines of the asylum walls. The research must be broadened out and brought to bear on a great many problems which cannot be found within the asylum. Insanity does not develop within the hospitals, because the patients are brought there after the symptoms have developed and often gone far on the highway of mental deterioration. It is hardly sensible to expect that we can get an insight into the deepest problem of science—the mechanism of mind, its variation, its operation, its growth and decay, its normal and abnormal manifestations—unless we have the opportunities of studying such operations in their very birth. There is no branch of the medical science which presents more complicated and difficult problems to solve than that of psychiatry.

The establishment of a central psychological institute would be a necessary step if we undertake to unravel the mysteries of mental diseases. The different branches of science must be coordinated and the work must go hand-in-hand, otherwise the whole aim of the work is defeated, the investigation will become one-sided and restricted and what few facts are gained will not be open to comprehensive interpretation.

The original cost of building a laboratory and equipping it with all the necessary apparatus to enter into the various scientific branches bearing upon the subject of the investigation of insanity would be considerable, and it would be asking too much for the General Assembly to appropriate funds to establish such a laboratory in connection with each hospital in the State, therefore, I would favor the plan of establishing but one laboratory, and this to be in connection with the Ohio State University.

This institute should be under the directorship of a broad-minded, public-spirited, scientific man, not necessarily a physician or even an alienist, but a man of acknowledged reputation in his special branch of science. The director should have the authority to select his associates in the work, and they should be men equally prominent in their special line of work. With such an assembly of scientific men, working hand-in-hand, in a well-appointed laboratory, we should expect in a short time to see results from their efforts, which would have the weight of authority, coming as it would from a laboratory fully equipped to attack the various problems of psychiatry.

I desire to lay stress on the establishment of a central pathological institute, not restricting its studies along any one exclusive line of science, but making the investigation broad and comprehensive by the union of all those branches of science which could be practically brought to bear upon the scientific study of mental diseases. The great progress in the science of the cell structure, the progress in bacteriology, pathology and psychology, linked with physiological chemistry, the comprehension of the correlation of the nervous system with other portions of the body, the tendency to unite all of the sciences so that they might be focused upon the problems of the physical basis of insanity, make the time ripe for the establishment of a central department for scientific work of the State hospitals, not as an experiment, but on a permanent basis, which would justify the expenditure of money necessary for its successful operation.

A very important work which a central pathological institute could do, and one which would be highly appreciated by the superintendents of the State hospitals would be that of permitting our assistant physicians the privilege of spending a portion of their time in the institute for instruction in special lines of research work. This would have a tendency to stimulate the assistant physicians in scientific investigation, and would add to their knowledge which would necessarily react to the good of the institution with which they were connected.

The director of the institute could keep in touch with the hospitals and from time to time issue bulletins from the laboratory outlining his policy and requesting certain lines of investigation to be made by the assistant physicians who had had special training in the institute. A uniform classification of insanity and uniform statistical tables could be adopted which would greatly enhance the value of this line of inquiry.

The Cleveland Medical Journal

CONTINUING { THE CLEVELAND MEDICAL GAZETTE and THE CLEVELAND JOURNAL OF MEDICINE

MONTHLY

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EDITORIAL

Cleveland's Bond Issue for a Tuberculosis Sanatorium.

A bond issue of $250,000.00 to provide funds for a tuberculosis sanatorium for the City of Cleveland was fortunately made possible by the recent special election. The need for such an institution of sufficient size has long been apparent to everyone who has given any consideration at all to the problem of the suppression of tuberculosis, the accommodation at the existing sanatorium at Warrensville being entirely too limited to provide for the large number of tuberculous individuals needing such care in a city the size of this. It is often a difficult matter to impress upon the voters the necessity for such measures of a sanitary nature: too often they are neglected to permit the expenditure of funds for projects which seem more likely to be productive of financial returns. Various factors have been instrumental in educating the public and pointing out to them the urgent need for such an institution. The Antituberculosis League has played a prominent part and its efforts have been wonderfully aided by the publicity which the newspapers have furnished. The endorsement of the proposed bond issue by the Chamber of Commerce was no doubt responsible for securing many votes. A special committee appointed by the Chamber prepared a report dealing with the question; this so aptly sums up the situation that although this particular bond issue is now assured, the report might prove of value to other municipalities facing a similar situation. The report is as follows:

To the Board of Directors and Members of the Cleveland Chamber of Commerce.

Gentlemen: In accord with the instructions of the board of directors, your committee on municipal sanitation has considered the resolution of the city council providing that a bond issue of $250,000 for the purpose of erecting tuberculosis hospitals and equipping and furnishing the same, be submitted to the electors of Cleveland at a special election to be held on July 22. The committee believes that this question should be considered from two standpoints:—primarily, the value of the proposed tuberculosis hospitals as a protection to public health, and secondarily, the cost of the erection and maintenance of these hospitals and the economic saving to the community which may result.

Tuberculosis is a readily communicable disease. It is easily transmitted from one individual to another. That is, the presence in a community of a few individuals having the disease, means that in all probability some, perhaps a great many people, will contract the disease. It is like many other diseases in this respect,—for instance, typhoid fever, small-pox, yellow fever, leprosy. Again, tuberculosis is an easily preventable disease. That is, a few individuals having the disease in a community, can be prevented, by proper precautions, from giving the disease to others. In this respect again it is like other diseases. The amount of typhoid fever and small-pox has been greatly reduced by the use of intelligent preventive methods and, in all probability, these diseases will sometime disappear. Yellow fever and leprosy have almost entirely disappeared through the application of efficient measures.

Now, as a matter of fact, has the presence of a few cases of tuberculosis *in Cleveland,* resulted in its spread so that now a large number of people have the disease? And again, if this is so, are there known methods by which the spread of tuberculosis from existing cases to other individuals can be prevented *in Cleveland,* just as the spread of small-pox and typhoid have in a large degree been prevented; and even caused practically to disappear, as leprosy has practically disappeared?

Last year 700 people in Cleveland died of tuberculosis. This is one-tenth the total number of people who died in this city last year. The same proportion held good the year before last and for years before that. The same will be true next year and for many years to come, if conditions remain as they are today. In other words, out of 525,000 people now living in Cleveland, 52,500 people will die from tuberculosis. Experience has shown that there are methods in existence which can bring about a reduction in tuberculosis very much as the prevalence of small-pox has been reduced. The prevention of tuberculosis is perhaps more difficult in New York than in any other city in the world, yet the vigorous action of the people of that city has resulted in the reduction of the death rate from tuberculosis by nearly one-half. Boston, in a short time, has reduced its death rate one-fifth. England, Germany and other countries, by intelligent action, have secured similar reductions, while it has been found that nearly every case of tuberculosis which is treated in the *early stages of the disease,* can be cured. The cities which have undertaken no preventive and curative measures have seen a steady increase in their deaths from tuberculosis. The cities which have taken vigorous action have seen a corresponding reduction. In Cleveland, although our population has rapidly increased and with it the conditions which usually foster tuberculosis, we have, by active measures, succeeded in preventing an increase in our death rate. But we have not secured any reduction. Clearly there are methods by which the existence of tuberculosis can be reduced, and it is reasonable to assume that these methods, properly applied, will, in time, cause a practical disappearance of tuberculosis.

In this city the Antituberculosis League, with the aid of other charities, is carrying on an active campaign to prevent the spread of tuberculosis. The League has shown tuberculosis patients how to keep from spreading the disease; it has shown people how to protect themselves against the disease; it maintains a special dispensary; it employs a staff of visiting physicians and nurses; it conducts a tent colony for children; it has secured hospital and sanatorium care for a large number of patients. The Board of Health requires registration of all cases of tuberculosis; it maintains a laboratory for free examinations of sputum; it disinfects infected houses; it maintains temporary buildings and a small hospital at Warrensville for the care of the tuberculous poor. Cleveland, through its health department and private societies, is spending nearly $100,000 a year in dealing with tuberculosis. All of this work is efficiently done. Why is it, therefore, that there has been no appreciable reduction in the death rate from tuberculosis in Cleveland, when in New York and Boston the death rate has been greatly reduced? The reason is, that while we have done splendid work in educating our people in the prevention of tuberculosis, while we have given excellent care to tuberculosis patients in their homes, we have failed to provide the most important thing; that is, the protection of the community against those who are directly responsible for the spread of the disease. Many, perhaps most of these people who have tuberculosis, can be educated to care for themselves in such a way that they will not become dangerous to the community. There are always some, however, who, because of ignorance or carelessness, will not take proper precautions and who are therefore responsible for the communication of the disease to others with whom they come in contact. It is against these that we must protect ourselves. New York and Boston, England and Germany, and other cities and countries have secured this protection by providing hospitals and sanatoria. We find that the countries and the cities which are best caring for these dangerous patients are the ones which have secured the most rapid reduction in the death rate from tuberculosis. Cleveland has forged a strong chain to pull down this death rate. But one link is missing: a hospital which can properly care for those who are responsible for the spread of the disease in Cleveland. Until this link is supplied, the whole chain will be of little value.

The following definition of the ideal conditions for a tuberculosis hospital is quoted from Dr John B. Huber's book on "Consumption and Civilization": "It (the hospital) should be built if possible on the south side of a hill, with woods near by, in which may be placed reclining chairs and summer houses. The soil should be dry and porous. There must be abundant pure drinking water. There should be graduated walks. Much of the land should be suitable for agriculture. It should be higher than the surrounding country, so that it will be above the mists and fogs of the lowlands. The ground leading from the sanatorium should be sloping, in order to insure drainage. The sewerage must be perfect. Railway communication should be so easy that supplies of all sorts may be had cheaply. But the site should be far enough away from any town to avoid dust and factory smoke." The proposed site at Warrensville for the tuberculosis hospital conforms in nearly every detail to this description. We believe that there is not a more suitable place in Ohio for a tuberculosis hospital. This committee has received written assurances from the Department of Charities and Correction, that the best expert opinion obtainable will be sought in making plans for the construction of the hospitals, and that the plans adopted will be in accord with recognized standards of efficiency.

The citizens of Cleveland have already shown their willingness to spend money for this sort of protection. In the two years of 1903 and 1904 there were 675 people who died from tuberculosis. Yet, according to a statement of the city water department, we have spent $1,200,000 on our water supply as a protection against typhoid. The appearance of a few cases of small-pox in Cleveland is sufficient to make us willing to spend any amount of money to protect ourselves against the spread of this disease. There have been a great many times the number of deaths from tuberculosis so far this year, as there have been from small-pox. Is there any reason why we should not be many times more vigorous in our effort to protect ourselves against the spread of tuberculosis?

The committee on municipal sanitation believes that it is a good business proposition to erect municipal tuberculosis hospitals, which will make fully effective all of the work which we are now doing. The German Workingmen's Insurance Companies have found it costs less to treat the early cases of tuberculosis than to care for the families of those who die from the disease. As a matter of dollars and cents, therefore, these companies are sending 9,000 workingmen a year to tuberculosis sanatoria at an annual cost of $1,150,000. Insurance companies and medical authorities commonly estimate the value of a human life to the community to be $1,500. On this basis the financial loss to Cleveland due to deaths from tuberculosis is $1,047,000 annually. This, of course, is only a small part of the total loss when we consider the cost of caring for the 8,000 or 10,000 people who have the disease and the cost of providing for the families of those who die. The city council is unanimously asking for $250,000 to provide for additional hospital facilities. This hospital will make it possible to provide for about 350 patients. The Antituberculosis League estimates that there are about 1,000 people in Cleveland who should have hospital or sanatorium treatment. While the present bond issue will not altogether meet the immediate needs, it will provide protection against the most dangerous centers of infection. Is it not worth while to spend $250,000 to make possible the annual saving of 700 lives and over $1,000,000 to this community?

The committee on municipal sanitation believes that it is impossible for this city to spend $250,000 to any better advantage than for the erection of tuberculosis hospitals. The committee therefore earnestly recommends that the electors of Cleveland vote in favor of the issuance of these bonds.

Respectfully submitted,

P. W. Harvey
Hudson D. Bishop,
Geo. W. Crile,
E. F. Cushing,
E. M. Goodwin,
John H. Lowman,
John MacGregor,
Norman C. McLoud,
John P. Sawyer,
H. G. Sherman,
J. F. Stephan,
J. A. Stephens,
J. J. Thomas,
C. C. Young,

Committee on Municipal Sanitation,
By P. W. HARVEY, Chairman.

July 5, 1910.

Straw Itch.

This itching eruptive disease which was first described by Schamberg in 1901 has, within the past year, been shown by Goldberg (*Public Health Reports,* Vol. XXIV, No. 28; Vol. XXV, No. 23) to be due to an almost microscopic mite which normally preys upon various larvae and insects infecting grain and straw. This mite, *Pediculoides ventricosus,* is akin to the red bug or chigger and to the common itch mite of scabies: like them it attacks both men and animals, producing a more or less marked, itching eruption, sometimes attended with considerable constitutional disturbance. Within a few hours of exposure to the parasite, severe itching occurs and a cutaneous eruption appears which first taking the form of wheals, progresses through vesicular and pustular stages so that in the more severe cases the clinical picture may closely resemble a mild form of variola or, in other instances, varicella. The opportunity for the parasites attacking man may be presented not only upon the farm when the grain is being harvested in the field or later thrashed, but inasmuch as the mites may live in the straw for a considerable time, they may attack people who have nothing to do with farming but live, perhaps, in cities, and who have been brought into contact with the infected straw. In fact many of the cases have been noted in towns, the patients having slept on mattresses filled with straw infected with these mites. The condition is fortunately readily amenable to treatment when the exact nature of the affection has been recognized and if further attacks by the parasites can be obviated. If the mites are present in mattresses they can easily be killed by fumigation, heat, etc., or the straw can be burned. In the harvest fields the proposition is an entirely different one and the mites may be so numerous that harvesting may even prove an impossibility. The treatment of the eruption itself requires merely soothing applications. Since the parasites do not burrow into the epidermis they are readily dislodged by ordinary bathing, but if persistent, an application of a mild antiseptic or of sulphur ointment will prove effective. Infected clothes, of course, must be disinfected as in the case of scabies. The parasites are apparently widespread and their distribution appears to be increasing. A number of cases of infection by them have been noted in Ohio and during the summer season it is quite possible that some of the itching affections ascribed to poison ivy, urticaria, etc., may in reality prove on closer investigation to be due to this cause.

Ethical Advertising in Medical Journals.

The work of the Council on Pharmacy and Chemistry of the A. M. A. is steadily producing results which are manifested in various ways, not the least of which is the gradual elimination of unethical advertisements from the pages of medical publications. The censoring of medical journal advertisements so that they will conform to the regulations of the Council is a move which means much to any journal contemplating such a step—usually such a step does not pass the stage of contemplation, the loss of revenue which would result from it seems, in most instances, too serious a matter to the management. A few—very few—of the medical journals, however, now refuse advertisements of such articles as are not approved by the Council. The Gulf States Journal of Medicine and Surgery has recently inaugurated such a policy and is deserving of every encouragement: while it is hard for the pioneers, every additional journal that takes this action makes it easier for others to follow the good example. If for no other reason than that the utterances of a journal are thereby freed from a restraint that would otherwise obtain, such a plan of procedure is justified. When all the large and reputable journals of the land, owned by publishing houses and in reality independent of any control by the profession, see fit to free their pages of this objectionable matter? It would seem that a plan of campaign, whereby subscribers of these journals might be induced to write personally to the management to voice their objections, might be productive of results and bring home to the publishers the fact that unethical advertising is an insult to their readers.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Hemophilia Neonatorum: In *American Jour. of the Medical Sciences,* John Edgar Welch treats of the use of normal human blood serum as a curative agent in hemophilia neonatorum. He reports a series of cases, the etiology of the hemorrhages in which, as is usually the case, is unknown. In none of the cases was it due to traumatism. Bleeding appears, as a rule, during the first week of life; in this series most frequently on the second, third and fourth days, and the primary bleeding may be from anywhere in the skin or mucous membrane surfaces. The cord hemorrhage may persist in spite of all local remedies, and in two or three days a considerable quantity of blood may be lost by this apparently insignificant bleeding. Having in mind the almost uniform failure of drugs in this condition, and the possibility of producing serum sickness by using the serum of a different species he decided to use normal human serum. As the result of its use, he believes that in normal human serum we find an agent that successfully controls hemorrhage in the new born. He does not theorize as to the causes of these hemorrhages; they are probably due to different factors. It is possible that some were cases of hemophilia, while others were due to some infection. It is now a matter of common knowledge that fresh normal blood serum is often bactericidal. If put into the body of a baby in sufficient quantity, and kept moving by the circulation to elimination, it must surely exert this bactericidal effect. He has used it in repeated small and large doses and states positively that it never gives serum sickness, or causes anaphylaxis in the human subject. On the other hand it is a perfect form of food, already digested, and ready to be taken up and utilized by the tissues and cells of the body, so that without dissipation of energy, regeneration may progress with a maximum of efficiency. In many of these babies with bleeding from the gastro-intestinal tract nourishment from this source is impossible. It may be that the hemorrhage is partly and in some cases entirely controlled by the nutritive effect on the body tissues of the infant. In others it is possible that a thrombokinase is supplied. As to the dose to be used in any given instance, it should be said that this depends on the urgency of the case. One is apt to err on the side of too small a dose. It is advisable to begin with at least 10 c.c. and repeat three times a day if the infant is bleeding only moderately. In severe cases it should be given every two hours, and in larger quantities if necessary. It is very important to begin the treatment at the first indication of bleeding, however insignificant apparently. Slight bleeding of the cord may be accompanied by internal hemorrhage if not stopped immediately. When placed under the skin normal human blood serum is quite readily removed from the site of injection. He has seen two ounces completely absorbed within five minutes by gently massaging the skin over the site of injection while administering the dose. He considers the use of the serum perfectly harmless and gives a simple method of collecting the blood for its preparation.

Cardiovascular Disease: James Tyson in the *International Clinics (Vol. II, Series XX)* considers the treatment of cardiovascular disease, the non-medicinal treatment at the present day being at least as important as the medicinal. He outlines the medicinal treatment in those cases in which compensation is lost, whether due to obstructive valvular disease or myocarditis. In those cases with edema the first indication is for a purgative, either a saline or elaterium, the former preferably at first because simple and less apt to derange the stomach. Free purgation is an essential condition for success after the latter measures. After purgation digitalis is still the most reliable remedy and the infusion, if properly made, the best preparation. As a diuretic he thinks highly of theocin, a derivative of theobromin, of which the soluble form known as acet-theocin sodium or soluble theocin is most suitable, being less disposed to derange the stomach. Although not always to be relied upon, he has found it one of the most powerful of diuretics; it is best given in 0.2 gm. (3 grains) doses in water, at first twice a day increased to four times a day if necessary. It is said not to affect the heart but to regulate the renal circulation. It is chiefly in cardiac dropsy, therefore, that it is beneficial, requiring for this purpose a kidney tolerably intact. Theobromin itself is in these cases a good diuretic in 0.5 gm. (7½ grain) doses to the amount of 2 gm. (30 grains) in 24 hours. Less satisfactory, but sometimes also an active diuretic, is the soluble combination of theobromin with salicylate of sodium, known as diuretin. It is much more uncertain and nauseous; it may be given in 0.7 gm. (10 grain) doses every four hours, and should also be freshly dissolved. Turbidity of the solution indicates that the drug has spoiled. Agurin is another double salt of acetate of sodium and theobromin, with a larger proportion (60%) of the latter, and should be a better drug, but his experience with it is limited. The dose is 8 to 15 grains three times daily for adults. All drugs of the theobromin class are usually effective in 48 to 72 hours; if not we should pass on to something else. He has lately noted two new remedies, nucleinate of sodium and pituitrin or extract of pituitary body; the first given hypodermically in doses of ¼ to ½ grain dissolved in 15 minims of normal salt solution twice a day. Pituitrin is given in 10 minim doses by the mouth every four hours increasing to 15 minims. Under its use the urine in one case increased in three days from four ounces in 24 hours to 50 ounces.

Pneumonia: H. A. Hare in the *Therapeutic Gazette* for June calls attention to the ratio of blood pressure to pulse rate in croupous pneumonia. He thinks that it will be generally admitted that in the course of an attack of croupous pneumonia the factor which gives us most concern is the state of the circulatory system. He has long held and taught that an intact vascular mechanism is as essential to life as an intact cardiac mechanism, and he has long believed that, aside from the formation of the heart clot, and myocardial degeneration from toxemia, the chief cause of death in this disease is vascular relaxation or paralysis, as the result of which the patient bleeds to death into his own blood vessels, so that his heart becomes exhausted by rapid beating in an endeavor to maintain an adequate arterial pressure. He quotes G. A. Gibson to the effect that a pressure appreciably normal in pneumonia is invariably of evil omen, and any considerable fall bodes disaster. When the arterial pressure expressed in millimeters of mercury does not fall below the pulse rate expressed in beats per minute, the fact may be taken as an excellent augury: while the converse is equally true. In 15 cases of pneumonia studied by Gordon there was not a fatal result when the blood pressure expressed in millimeters of mercury was maintained above the pulse rate per minute and in only one case did it happen that recovery occurred after the blood pressure was persistently below the pulse rate: this patient got well by the immediate administration of strychnin, quinin and strophanthus, which to some extent restored the normal ratio. Hare's observations fully corroborate those of Gibson and Gordon. In all cases in which the blood pressure fell to the pulse rate or below it, active stimulation was instituted. In those cases in which the blood pressure bore a normal ratio to the pulse rate and the heart signs were satisfactory, no treatment by drugs was resorted to. Hare advises the continuance of those observations by which we have been accustomed to control therapeutic measures in the past, but the point he especially emphasizes is that by the use of the sphygmomanometer we can keep track of the patient from day to day, record his circulatory state, and when an intelligent trained nurse or resident physician is at hand observations can be made so frequently in the absence of the attending physician that any tendency to circulatory failure can be discovered, and equally promptly combated.

Spartein: In the *American Journal of Clinical Medicine* for July *(Revue Therapeutique des Alkaloides)* Huchard affirms that the heart of a person afflicted with arteriosclerosis is always in danger of dilation. Since Germain See has shown that spartein is the best remedy for cardiac dilation, the drug is indicated in the cardiac symptoms of arteriosclerosis. It tends to prevent an insufficiency of the myocardium without much drugging. And this object is obtained much more surely, and with greater safety with spartein than with digitalin. The latter drug requires a much greater nicety of dosage, and especially a constant supervision by the physician, lest serious consequences supervene. Moreover, in distinction from digitalin, spartein in moderate doses, having no effect on the blood pressure, is even more strongly indicated in this disease when hypertension of the circulation, so frequent in this condition, is encountered. Huchard believes it superior even to digitalin as a heart tonic, the latter acting when the cavities of the heart are already dilated, while spartein acts upon the entire cardiac muscle whatever the cause of the dilation, whether impending or acquired. Spartein too does not exert any effect upon the digestive tract, while digitalin is apt to do so, and hence with spartein we do not fear digestive disturbances, neither need we fear toxic results, as is the case with digitalin which has a distinctly cumulative action. Such effects never occur in the case of spartein, and the drug is rapidly eliminated even in chronic nephritis. This is a most important consideration, since in arteriosclerosis we have to deal with an insufficient action of the kidneys. Spartein is here the drug of choice, owing to its remarkable action in all cases of weakening of the cardiac muscle and in all cases in which the tonic effect of the muscle, if it is dilated, has to be conserved, or in cases in which dilation is imminent but the blood pressure must not be affected.

Sunstroke: *American Medicine* for June believes that the three forms of sunstroke are very much misunderstood by physicians, even in the tropics, and curative means are often misapplied. The form with high fever and more or less profound coma is known to be due to heat alone, and should be called "heat stroke" or "thermic fever," for it often occurs in hot firerooms or at night. Moreover negroes suffer from it unduly if they are exposed to a high degree of external heat, which their black skins absorb so easily. In their natural state they are rarely if ever exposed to temperatures over 95° or 100°, while in a fireroom of 150° temperature they suffer more than white men. The second form of "heat cramps" now worrying the naval surgeons seems to be solely due to withdrawal of body fluids by excessive perspiration, which has not been replaced by frequent drinking of copious draughts of water. It is often miraculously cured by intravenous injections of saline solutions, or by high enemata if the patient is not too far gone to absorb through his mucous membranes. The third form of collapse, with little or no rise of temperature or loss of consciousness and which is generally labeled "heat exhaustion," is gradually being recognized by tropical experts as due to the effects of light. It is often seen in places where and in seasons when heat stroke does not occur. Its prevention is merely a matter of avoiding exposure to excessive light, irrespective of what is done to avoid overheating. The puzzling cases are those with a mixture of all three conditions, for sunstrokes are of every conceivable grade between these three forms, if the patient has been exposed to both heat and light, and has suffered from excessive perspiration without the use of plenty of drinking water. A recent textbook actually advises abstinence from drinking water in conditions of great heat when everyone knows that it must be taken to replace perspiration, the evaporation of which carries off surplus heat. Abstinence also prevents proper elimination through the kidneys, bringing on numerous symptoms of toxemia, and the highly concentrated urine has been known to cause inflammations of the whole urinary tract. If cool, shady places cannot be found and one must expose himself to the heat and light, let him avoid undue exertion if he can, provide himself with opaque clothing for its shade, and drink sufficient water to keep up a copious perspiration and free flow of urine.

Bismuth Subnitrate: Judson A. Hulse in the *Journal A. M. A.* for July 16 calls attention to the fact that there are a number of bismuth preparations on the market, put out by manufacturing chemists in the shape of bismuth creams, milks, etc., and purporting to have the same field of usefulness in gastro-intestinal disorders as bismuth subnitrate. He believes these preparations are made from the oxid and while from a pharmaceutical standpoint they seem to leave nothing to be desired, clinically, he is convinced, they are well nigh worthless, at least in infants. In a series of observations covering their administration to 21 infants suffering from acute gastro-enteric conditions he failed to observe a sedative or astringent action in a single case. In 21 cases he gave four ounces of a well known bismuth milk in 36 hours to infants suffering from gastro-enteritis, with frequent stools containing some blood and abundant mucus, without the slightest appreciable effect in the character or frequency of the stools, notwithstanding the fact that milk was entirely withheld during this treatment for a period of seven days. The bismuth milk passed through the entire alimentary tract, practically unchanged, and appeared in the stools as a white semisolid mass. Bismuth subnitrate was now given, in 10 grain doses, every two hours, resulting in darkened stools, lessened amount of blood, and almost complete disappearance of mucus within the first 24 hours of its administration.

Symptomatic Treatment: In the *Medical World* for July, Geo. F. Butler treats of symptomatic treatment, the general unscientific conception of therapeutics implying at least the conception of a specific for particular diseases and the conception, entirely too common, that self-limitation of a disease is an absolute law. The existence of conditions varying from the disease type occurring, indicates that there are factors which interfere with the self limitation of diseases and with the manifestation of such diseases. The therapeutic problem in these diseases, therefore, which are called the opprobrium of therapeusis is to determine whether conditions which produce modified constitutional symptoms are to be obtained by medicinal agencies. The elements which may be affected are the course of the disease, the general constitutional vitality and the constitutional vitality of the patient at the time of the attack. These factors may be affected by symptom remedies applied to conditions produced by the disease which tend to reduce the congenital and acquired vitality. In certain cases fever is a factor which tends to reduce the general strength, and to exhaust the patient. Reduction of the fever, therefore, is a problem in such cases to be studied therapeutically. As general nervous agitation in the fevers is connected with insomnia of the coma vigil type, hypnotics are peculiarly indicated since the fever, nervous irritation, and the insomnia work in a vicious circle to exhaust the nervous vitality. Indeed, until insomnia is conquered it is useless to expect relief of the other symptoms. In these cases the kidneys, which are under a tremendous strain from nerve waste, need attention. To the neglect of these, the most objectionable results of hypnotics are due. Hypnotics given to secure rest at a certain time when the nervous system is weak, and particularly when they do not interfere with renal elimination, act excellently on the agencies which are sapping the general vitality in these cases; as usually given, however, they are deleterious. The employment, therefore, of symptom remedies to produce constitutional results, and to produce likewise an aborted type of so-called limited diseases is a logical procedure. Disease is not treated but its effects on the system are so managed as to secure proper vitality. The autotoxic states come peculiarly under the same category, for the symptoms, from the effect of the cause on the constitution attack, and the indications for treatment vary with the effects produced on the general constitution. Here the great aim is to secure proper elimination without strain on the eliminating organs. These autotoxic states mimic almost every type of disorder not excluding those due to bacterial toxins. Scientific therapeusis, therefore, implies a proper study of both direct and untoward effects of drugs correlated with a study of the symptoms presented by a given case. The fact that symptoms, at the very least, may exhaust general vitality, upon which the chances of recovery depend, has not been taken into consideration to the degree it should be in the ordinary conceptions of therapeusis.

Bronchopneumonia: In the *Medical Record* for July 2 *(Lyon Medical),* Weill gives the results obtained during an experience of a year in the treatment of bronchopneumonia with inhalations of pure oxygen. This treatment is not symptomatic solely, but is directed against the specific septic process of the disease, which he considers to be a descending infection communicated from the nasopharynx. The technic is simple, the remedy harmless, and the clinical results excellent. It may also be used as a prophylactic measure in bronchitis of severe type, to ward off bronchopneumonia. The inhalations are given from rubber bags of oxygen with a mask which covers the nose and mouth and they are repeated every hour or half hour creating a veritable atmosphere of oxygen. The immediate effects are good; the pulse is slowed, temperature and respiration lowered, and dyspnea lessened. As soon as these good effects wear off the inhalation should be repeated. The course of the disease is shortened, and its severity lessened. A large proportion of the cases treated are cured.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph. G., Ph. D.

Solubility of Terpin Hydrate: F. W. A. Hain (*The Apothecary, 7,* 20) calls attention to the solubility of terpin hydrate in warm glycerin and recommends that this be mentioned in the next pharmacopoeia. He publishes a recipe for a compound (glycerinic and flavored) solution containing two grains of terpin hydrate to the teaspoonful.

Elixir of Triple Phosphates: Few pharmaceuticals have been more frequently discussed than the official elixir of the phosphates of iron, quinin and strychnin and each writer has a recipe for which claim is made that it does not darken when exposed to light nor precipitate. The latest is the one proposed at the Richmond meeting of the American Pharmaceutical Association by A. F. Marquier. (*The Apothecary, 7,* 20).

Strength of Pepsin: A timely paper on this subject was read at the Richmond meeting of the American Pharmaceutical Association by F. M. Apple (*The Apothecary, 7,* 20). He calls attention to the anomaly of an official standard of 1 to 3,000 (1 grain pepsin must dissolve 3,000 grains hard boiled egg albumin) when pepsins of even 1 to 15,000 strength can be purchased. The obvious conclusion is that if a 1 to 15,000 pepsin can be obtained a pepsin of one-fifth that strength (1 to 3,000) means a product containing animal impurities which not only increase the bulk (hence dose) of pepsin, but cause the pharmaceuticals made from it to be less stable. He therefore urges that in the next pharmacopoeia the strength of pepsin be increased to at least 1 to 6,000.

Ampoules: An interesting article on the subject written by a retail druggist, R. R. Rogers, appears in the *Pacific Pharmacist 4,* 100). After outlining their history beginning with Limousin in 1886, he proceeds to present day details, such as use of Jena glass, since it resists the action of chemicals and is less likely to be alkaline than is ordinary glass; the rinsing of ampoules with distilled water and subsequent drying; the filtering of the preparation, which must be absolutely free from dust; the filling of the ampoule with the preparation by use of a pipette or other device; and lastly the sterilization of the sealed ampoule.

As to sterilization, mercury compounds will stand heating in an autoclave at 120-125° C.; most chemicals will stand heating on a water bath; while some substances, such as quinin are sensitive to heat and must be intermittently sterilized below 100° C.

The writer then describes the 15 preparations he dispenses in ampoules, among which are mercury cacodylate, camphorated oil (for heart stimulation in collapse) arsacetin, cocain, ergot and strophanthin.

New Ointment Base: M. Monteil (*Bull. Gen. de Therapeutique,* through *Southern Pharmaceutical Journal, 2,* 484) recommends the following curious combination: antipyrin 188 grams, resorcin 110 grams, terpin hydrate 180 grams, when heated on an oil bath to 125° C. fuse and on cooling solidifies to a transparent vitreous mass. If while still fused, 1000 grams warm glycerin is added by trituration, a mixture resembling cold cream results. This ointment-like glycerol is antiseptic, non-caustic, sedative and hemostatic and can easily be washed off the skin with water.

A Hydriodic Mixture: Under this title, J. Tait (*Brit. and Colon. Drugg.*, through *Merck's Report, 19,* 197) describes an incompatible prescription calling for potassium iodid 2 drams, diluted hydrobromic acid 4 fluiddrams, chloroform water to make 6 fluidounces. The liquid becomes yellow and then brown, due to liberation of irritating free iodin.

Tait's experiments showed that the addition of minute amounts of sodium hypophosphite—even as little as one-half of a grain to a fluidounce of the mixture—prevented liberation of iodin, even when the mixture was exposed to direct sunlight. A lesser amount of the hypophosphite—say one-sixteenth grain to the fluidounce—prevented darkening of the mixture when kept protected from the light, but when exposed to sunlight the liquid turned brown. Curiously, if the mixture was then put in a dark place it bleached and the alternate darkening and bleaching, according as to whether in sunshine or out, could be repeated again and again.

As the writer says, the mixture furnishes a very interesting problem in physical chemistry.

Some Incompatible Prescriptions: H. A. B. Dunning (*Bulletin of Pharmacy, 24,* 290) presents five prescriptions recently brought to him. The first calling for mercuric chlorid 2 grains, chloral hydrate 3 scruples, zinc sulphate 2 scruples, quinin hydrochlorid 1 dram, alcohol 1 fluidounce, and water 3 fluidounces, suggested an incompatibility between the mercuric chlorid and the alkaloid, quinin; but the character of the solvent and the presence of the chloral hydrate prevented this. The zinc sulphate and the quinin hydrochlorid did however react with precipitation of part of the quinin sulphate formed. This, however, can be prevented by using, instead of the hydrochlorid, the proportional amount of the bisulphate of the alkaloid.

The second prescription consisted of balsam Peru 4 drams, sulphur 1 ounce, salicylic acid 6 drams, and white vaselin 6 ounces. The finished ointment rubbed on the skin separates into greasy liquid and quill-like masses. If the balsam is mixed with an equal volume of alcohol and rubbed with the vaselin and the other ingredients, then mixed in separately, a satisfactory product is obtained.

The third prescription—a mixture of syrups of squill, ipecac and wild cherry, along with spirit of nitrous ether—was persistently effervescent, due to separation of the ethyl nitrite from the spirit by the water of the syrups; the separate ethyl nitrite boiling at ordinary temperatures.

The fourth was for conseals containing salol and thymol (which liquefy when mixed) along with bismuth subnitrate; the liquefaction was prevented by Dunning's method (this JOURNAL, *9,* 59) of putting the two grains of thymol in each dose in a gelatin capsule which was laid in the conseal with the other powders before sealing.

The fifth was an effervescent prescription calling for sodium bicarbonate, ammonium chlorid, codein sulphate and syrup of wild cherry and the effervescence was prevented by careful neutralization of the syrup with weak sodium hydroxid solution.

Constituents of Colocynth: A painstaking examination of the official colocynth pulp by Power and Moore (*Proc. Chem. Soc.,* through *Chemical Abstracts, 4,* 1605) yielded the following substances. A dihydric alcohol citrullol $C_{20}H_{36}O_2(OH)_2$ (M. P. 285-290° C.) of no physiological activity; a bitter non-glucosidal resin that was a marked purgative; a second resin which was separated into alpha-elaterin, hentriacontane $C_{31}H_{64}$ and a physosterol $C_{27}H_{46}O$ (M. P. 160-162° C.)

Book Reviews.

Diseases of the Heart and Aorta. By Arthur Douglass Hirschfelder, M. D., Associate in Medicine, Johns Hopkins University. With an introductory note by Lewellys F. Barker, M. D., LL. D., Professor of Medicine, Johns Hopkins University. With 329 illustrations by the author. J. B. Lippincott Company, Philadelphia and London.

In the past decade there have been great advances in the study of normal and pathological conditions in the heart and blood vessels, chiefly through the introduction of instruments of precision to supplement the usual clinical methods of examination. The study of blood pressure, the graphic methods of study of the venous pulse in the interpretation of cardiac arrhythmias, the determination of the size of the heart by means of the Roentgen rays, the phonographic recording of heart sounds by Einthoven—these together with many other methods have done much to elucidate many puzzling clinical problems. The results of these observations have appeared in various medical journals, but as yet no book has been published which presents the experimental and clinical methods in detail and the relative importance of one to the other. Hirschfelder has been an active worker for a number of years in the study of cardiac conditions, both from the standpoint of the laboratory and the bedside, and has contributed from time to time many valuable papers on these subjects. He is thus peculiarly fitted to present both phases of the question and to attach the proper importance to each.

Each chapter is preceded by an introductory section dealing with the experimental pathology and the more fundamental principles of the subject, which are used as a basis for frequent reference in the clinical discussion. Due attention is given to various practical points in the diagnosis and treatment. At the end of each chapter there is a bibliography, which, though incomplete, gives all the important references to the literature. The illustrations are numerous, well chosen, and nearly all original, in pleasing contrast to the majority of textbooks.

The book itself is divided into four parts: (1) General considerations and methods of diagnosis. (2) Diseased conditions due to diffuse pathological processes. (3) Diseased conditions due to localized lesions. (4) Functional diseases without anatomical lesion.

In the first part is a good review of the physiology of the heart, blood pressure and blood viscosity, the arterial and venous pulse, with the methods of recording them. There is an excellent chapter on physical examination.

The second part treats of cardiac overstrain in different degrees of severity. In the chapter on the symptoms of cardiac disease the author attempts to explain their occurrence from the standpoint of pathological physiology. A very full discussion is given of the general methods of treatment in affections of the heart by rest, by dietetic, hydrotherapeutic, gymnastic and pharmacologic measures. These are given in sufficient detail to be of the greatest assistance to the physician who turns to them when troubled about a case.

In the third part the diseases due to localized lesions are considered from the standpoint of pathological anatomy, pathological physiology, pathogenesis, symptomatology, diagnosis and treatment. Interest is added by the insertion of histories of typical cases to illustrate different conditions.

The fourth part is devoted to a consideration of functional diseases of the heart as paroxysmal tachycardia thyroid heart, and the so-called cardiac neuroses.

The style of the author is concise yet readable, and the subject matter is systematically arranged. This book is a pioneer work in that the author has collected and given in condensed form the data of experimental investigation together with the results of a systematic clinical study of cardiovascular disease. He shows in this way how much more could be accomplished in the study of disease by the laboratory worker and the clinician working hand in hand. There is a need for monographs of this character on other phases of internal medicine. This is in every respect the best systematic textbook on diseases of the heart that has appeared in recent years. J. P.

Diseases of the Eye. By George E. deSchweinitz, M. D., Professor of Ophthalmology in the University of Pennsylvania. Sixth revised edition, octavo of 945 pages, 351 text illustrations, and 7 lithographic plates. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $5.00 net; half morocco, $6.50 net.

The previous editions of this work are so well known that it is hardly necessary to outline the general plan followed in the author's treatment of his subject. The introductory chapters deal very thoroughly with the general optical principles and methods of examination of the patient, including the external and internal examination of the eyes and functional testing: the student who masters them is well prepared to make the most of his clinical work. The chapters on errors of refraction and their correction is very satisfactory. Chapters on diseases of the different parts of the eyes follow. In these a number of special paragraphs have been added for the first time, among which might be mentioned: obstetric injuries of the cornea, posterior scleritis, cyanosis of the retina, atoxyl amblyopia, ocular complications of nasal accessory sinus disease, Smith's operation for removal of cataract in its capsule, operations for prosthesis in cicatricial orbit, etc. Parts of many chapters have also been largely rewritten; of these might be mentioned those on cataract, diseases of the retina and glaucoma, iritis and its manifestations, the pathogenesis of sympathetic ophthalmia, nystagmus, etc. The volume closes with a chapter on operations and an appendix containing a discussion on the uses of the ophthalmoscope and tropometer and the localization of foreign bodies in the eyeball by means of the Roentgen rays. There is a very complete subject index occupying 54 pages. W. J. A.

Essentials of Laboratory Diagnosis. By Francis Ashley Faught, M. D., Director of the Laboratory of the Department of Clinical Medicine and Assistant to the Professor of Clinical Medicine, Medico-Chirurgical College, etc., Philadelphia, Pa. Second revised edition. F. A. Davis Company, publishers, Philadelphia, Pa. 1910.

According to his statement "the author has endeavored in this work to present in as concise a manner as possible a selection of analytical methods employed in the clinical laboratory, without burdening the reader with unnecessary detail, cumbersome methods, etc., many of which are extremely difficult, often requiring considerable knowledge of general chemistry and elaborate apparatus, which may place them beyond the reach of the practitioner."

The sentence quoted will serve to furnish the reader with an idea of the scope of this work, and to give him an example of the author's literary style. Those who like "Essentials" will undoubtedly like this one, for much has been crowded into a small volume of slightly more than 300 pages. The estimation of blood pressure together with the significance of the findings are gone into at some length. The technic of Wasserman and Noguchi reactions is described rather fully, which hardly seems consistent in view of the sentence quoted.

Inasmuch as "a special effort has been made to bring the subjects treated up to date," it is surprising to find no mention of the readily applied benzidin reaction under the description of tests for occult blood in stools.

One cannot help wondering why such books are written. They are manifestly insufficient. A student could scarcely use the book as a laboratory guide, on account of its inadequacy. For the general practitioner who is trying to work out his own diagnostic problems it would be equally useless on account of the lack of satisfactory plates. Witness the wretched caricature which is presumed to represent the parasite of malaria.

The man who in this day would prepare a really helpful, usable guide covering the entire field of laboratory diagnosis and attempts to condense it into 336 pages is to be admired for his hardihood. C. L. C.

Index of Symptoms, with Diagnostic Methods. By Ralph W. Leftwich, M. D., late Assistant Physician to the East London Children's Hospital. Fourth edition. Wm. Wood & Co., New York. Price, net $2.25.

Accuracy of diagnosis depends upon a very careful history and thorough physical examination. In this way the physician becomes acquainted with the important symptoms and physical signs, at once he tries to think of all the possible diseases to which these point, and by a process of exclusion arrives at a correct diagnosis. Such a book as the present work, in which the symptom forms the heading and the diseases in which it occurs are placed under it, will be of great assistance in recalling the various diseases to which any symptom or group of symptoms point. The book is unique, has been prepared with great care, and contains an enormous amount of condensed information. It can be recommended both to students and practitioners. J. P.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Gustavus P. Head, M. D., and Charles L. Mix, A. M., M. D. Volume 1. General Medicine. Edited by Frank Billings, M. S., M. D., Head of the Medical Department and Dean of the Faculty of Rush Medical College, Chicago, and J. H. Salisbury, A. M., M. D., Professor of Medicine, Chicago Clinical School. Series 1910. The Year Book Publishers, Chicago, Ill.

This small book, primarily written for the general practitioner, contains abstracts of the important articles published on diseases of the respiratory, circulatory, blood, and blood-making organs, infectious diseases, diseases of the ductless glands, metabolic diseases and diseases of the kidneys. The papers are well selected and the work of abstracting is well done. The work is useful to any one who wishes to keep in touch with current literature. J. P.

Prescription Writing and Formulary. By John M. Swan, M. D., Associate Professor of Clinical Medicine in the Medico-Chirurgical College of Philadelphia; Instructor in Clinical Pathology and Tropical Medicine, Philadelphia Polyclinic and College of Graduates in Medicine; Fellow of the College of Physicians of Philadelphia. Containing 1043 prescriptions. W. B. Saunders Company, Philadelphia and London.

The opening chapters deal with the construction of prescriptions and the Latin terms employed; a list of the official U. S. P. preparations, incompatibilities, etc. The greater part of this little work consists of prescriptions for various conditions, the latter being arranged in alphabetical order. While the object of the book is to further the use of official preparations instead of proprietaries, there is an almost total lack of indications given for the use of the various different prescriptions advised for any particular disease. W. C.

Acknowledgments.

American Practice of Surgery. A Complete System of the Science and Art of Surgery, by Representative Surgeons of the United States and Canada. Editors, Joseph D. Bryant, M. D., Albert H. Buck, M. D., LL. D. of New York City. Complete in eight volumes, profusely illustrated. Volume seven. Wm. Wood & Co., New York.

Refraction and Motility of the Eye. By Ellice M. Alger, M. D., Adjunct Professor of Ophthalmology at the New York Postgraduate Medical School. Ophthalmologist to the New York Dispensary, etc. With 122 illustrations. F. A. Davis Company, publishers, Philadelphia, Pa.

Hand-book of Electrotherapeutics by William James Dugan, M. D., Lecturer on Electrotherapeutics at Jefferson Medical College, etc., Philadelphia. With 91 illustrations. F. A. Davis Company, publishers, Philadelphia.

Motherhood. A Manual on the Management of Pregnancy, the Preparations for and Conduct of Labor, the Care of Mother and Child after Labor and the Principles and Methods of Infant Feeding up to the Third Year of the Child's Life. Prepared especially for Mothers, Nurses and Students of Medicine. By Hudson D. Bishop, M. D., Visiting Obstetrician to the Maternity Hospital, Cleveland, Ohio. Rose Publishing Co., Cleveland. 1910.

Transactions of the College of Physicians of Philadelphia. Third Series. Volume XXXI. Philadelphia.

A Textbook on the Therapeutic Action of Light. Including the Rho Rays, Solar and Violet Rays, Electric Arc Light and the Light Cabinet. By Gorydon Eugene Rogers, M. D., formerly Demonstrator of Anatomy in the University of New York City. With original illustrations. Published by the author.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Gustavus P. Head, M. D., and Charles L. Mix, A. M., M. D. Vol. II, General Surgery. Edited by John B. Murphy, A. M., M. D., LL.D., Prof. of Surgery in the Northwestern University, etc. Vol. III, The Eye, Ear, Nose and Throat. Edited by Casey A. Wood, C. M., M. D., D. C. L., Albert H. Andrews, M. D., and Gustavus P. Head, M. D. Vol. IV, Gynecology. Edited by Emelius C. Dudley, A. M., M. D., and C. von Bachellé, M. S., M. D. Series 1910. The Year Book Publishers, Chicago.

Nephrocoloptosis. A Description of the Nephrocolic Ligament and its Action in the Causation of Nephroptosis, with the Technic of the Operation of Nephrocolopexy. By H. W. Longyear, M. D. With 88 special illustrations and a colored frontispiece. C. V. Mosby Company, St. Louis, Mo.

Genesis. A Manual for the Instruction of Children in Matters Sexual. For the Use of Parents, Teachers, Physicians and Ministers. By E. S. Talmey, M. D. Former Pathologist to the Mothers' and Babies' Hospital and Gynecologist to the Yorkville Hospital, New York. With 19 cuts, 47 drawings in the text. The Practitioners' Publishing Co., New York. Price $1.50.

Albany Medical College Register of Students 1909-1910. Announcement for Session 1910-1911.

Transactions of the American Dermatological Association at its Thirty-third Annual Meeting held in Philadelphia, June 3, 4 and 5, 1909. Official Report of the Proceedings by Grover W. Wende, M. D., Secretary.

Eclectic Medical College Bulletin. Sixty-sixth Annual Announcement for 1910-1911 with List of Matriculates and Graduates for 1909-1910.

Public Health and Marine-Hospital Service of the United States: Public Health Bulletins Nos. 32, 33, 35, 36, 38. Hygienic Laboratory.—Bulletins Nos. 64, 68.

First Annual Report of the Charlotte Sanatorium, Charlotte, N. C., for the year 1909.

Reprints by: Nelson D. Brayton, A. M., M. D., Indianapolis; Howard Fox, M. D., New York; Lefferts A. McClelland, M. D., Brooklyn, N. Y.

Ohio State Board of Medical Registration and Examination.

Examination Papers, June 13, 14 and 15, 1910.

ANATOMY—1. Give the origin, course and distribution of the brachial artery. 2. What are the relations of the pneumogastric nerve in the neck. 3. How many bones in a lower extremity? Name them. 4. Name the cerebral lobes and fissures. 5. Give origin, insertion and action of the triceps muscle. 6. Name the parts of the digestive system. 7. Name the muscles of mastication. 8. Give the blood supply of the stomach. 9. What is the cauda equina, foramen of Winslow, optic thalamus, urachus, canal of Nuck? 10. What difference in the structure of voluntary and involuntary muscular tissue?

PHYSIOLOGY—1. Describe a cell. How are they propagated? 2. What are the elementary tissues and how are their cells classified? 3. What constitutes the cerebrospinal nervous system? 4. What results are observed when the seventh cranial nerve is paralyzed? 5. What is the relation between blood pressure and the pulse rate? 6. What changes take place in the blood during respiration Where and how are they accomplished? 7. In a general way, of what does digestion consist? 8. What are enzymes and how do they act? 9. What is the function of the pancreatic juice? 10. What are the solid constituents of the urine and what conditions may change their quantity in health?

CHEMISTRY—1. How does oxygen give strength to the body? 2. Describe the element that is a part of all acid compounds. 3. What is glycogen, where found, and from what derived? 4. What elements belong to the nitrogen group? Give the properties and uses of the one you consider the most important. 5. What is the amount of CO_2 in the atmosphere and why does it not increase? 6. In what part of the body and in what forms is phosphorus found? 7. Name the most important elements entering into the composition of the human body. 8. Give the principal constituents of milk. How would you detect water adulteration in milk? 9. What is a poison? 10. Name a poison which has a local and a remote effect and give its antidote.

MATERIA MEDICA AND THERAPEUTICS (REGULAR)—1. Explain the action of heat and cold as therapeutic agents and mention indications for each. 2. Under what conditions would you advise arterial transfusion of blood? What advantage has the process over hypodermoclysis? What disadvantage? 3. Given a case of diphtheria in a child five years old. Describe in detail your treatment and the effect expected of the remedy. 4. When should silver nitrate and when should the organic salts of silver be used in the treatment of ophthalmia neonatorum? 5. Give some indications for the use of thyroid gland. What untoward effects are produced by overuse? 6. Give some indications for the use of arsenic. In what forms may it be used? Give dose of each and symptoms resulting from its excessive use. 7. Outline a diet for a patient suffering with diabetes mellitus. Also for one suffering with chronic interstitial nephritis. 8. What would you use to overcome pleurisy with effusion. Explain action. 9. Explain the physiological action of the salines. 10. For what conditions would you advise x-ray treatment? How long should the patient be exposed at a single sitting? When would you advise him to return for treatment if a series of treatments were advised?

MATERIA MEDICA AND THERAPEUTICS (HOMEOPATHIC)—1. Explain the action of heat and cold as therapeutic agents and mention indications for each. 2. Name the salient symptoms that would lead you to prescribe opium. In what doses would you prescribe it? Is a careful history of the case essential? How many alkaloids has opium? Name five. 3. In prescribing, what is the only true scientific basis for the selection of a drug? 4. Given, swelling and suppuration of glands;

exostosis, curvature, caries, pale bloated face, ulceration of skin, swelling of nose and upper lip, scabs on hairy scalp, otorrhea—cancerous affection. Prescribe. 5. Give some indications for the use of thyroid gland. What untoward effects are produced by overuse? 6. Diagnose dysentery and give the three most likely indicated remedies. 7. Given, a woman extremely pale, not emaciated, pulse rapid—160, almost imperceptible at wrist, slow of comprehension, difficult respiration, coldness of extremities, finger nails blue, excessive hemorrhage from uterus, history of pregnancy negative, single,—give the homeopathically indicated remedy. What would you do? 8. How would you treat a case of membranous croup? What germ is present? Name three remedial agencies that will probably be indicated during progress. 9. Differentiate calcarea carb and silicea. Rhus tox and lachesis. 10. For what conditions would you advise x-ray treatment? How long should the patient be exposed at a single sitting? When would you advise him to return for treatment if a series of treatments were advised?

MATERIA MEDICA AND THERAPEUTICS (ECLECTIC)—1. Explain the action of heat and cold as therapeutic agents and mention indications for each. 2. In what class of agents would you place passiflora? How would you prescribe it? What indications would guide you? 3. What are the properties of gelsemium? What are its indications and in what diseases is it useful? 4. Give dose and indications for use of apocynum. Name some conditions in which you would prescribe it. 5. Give some indications for the use of thyroid gland. What untoward effects are produced by overuse? 6. Give indications for bryonia and diseases in which it is useful. 7. What uses would you make of carbolic acid in practise. How use it? 8. Chionanthus—in what conditions is this agent useful? What are indications for it. 9. What is the formula of Dover's powder? What are its properties and uses? 10. For what conditions would you advise x-ray treatment? How long should the patient be exposed at a single sitting? When would you advise him to return for treatment if a series of treatments were advised?

DIAGNOSIS—1. How are functional or hemic murmurs discriminated from organic murmurs? 2. Aphasia in its varieties. What central lesions indicate? 3. Determine diagnostic value of laryngeal paralysis. 4. What diagnostic significance is derived from a gross examination of the sputum? 5. What diagnostic significance has coma.

PRACTISE OF MEDICINE—1. How would you diagnose hereditary syphilis in a child? 2. What are the causes and symptoms of multiple neuritis? 3. Name the symptoms or physical signs of locomotor ataxia. 4. What is apoplexy? Give its etiology and state briefly the symptoms. 5. What is the significance of the Wasserman reaction? How is it obtained? 6. Name conditions with which uremia may be confounded. 7. Give the symptoms and physical signs of thoracic aneurysm. 8. How would you treat lobar pneumonia? 9. Give treatment of epidemic and endemic influenza and give sequelae. 10. How would you diagnose and treat cholera morbus?

SURGERY—1. Give the diagnostic signs of a typical case of pericardial effusion. What is the treatment? 2. Give the treatment of a fractured costal cartilage. 3. Diagnose a case of gall stones. How treat? 4. Differentiate extra-uterine pregnancy, ovarian cyst, and peritoneal effusion. 5. Diagnose anterior luxation of the hip joint. How correct? 6. Diagnose calculus of bladder. How treat? 7. Diagnose and give the significance of two kinds of chancre. How treat? 8. How would you treat a case of gonorrheal cystitis? 9. What important structures may be wounded in a vaginal hysterotomy? 10. Differentiate pregnancy and intra-uterine fibroid.

OBSTETRICS AND DISEASES OF WOMEN—1. What changes take place in the blood during pregnancy? 2. What purpose do these changes conserve? 3. Give briefly some of the theories which explain how, following labor, the placenta separates from the uterine wall. 4. Give the data upon which at term a diagnosis of first position of the vertex may be made without making a vaginal examination. 5. Name some of the causes which predispose to hemorrhage after labor. 6. You are called at the outset of labor and find a brow presenting; what do you advise? 7. Differentiate between a tubal pregnancy and an acute salpingitis. 8. Name some of the causes and give the treatment of acute cystitis. 9. How would you treat a hematoma of the scalp in the new born? 10. What have you to say concerning chronic endometritis as a cause of sterility; give its treatment.

DERMATOLOGY, SYPHILOLOGY AND DISEASES OF THE EYE, EAR, NOSE AND THROAT—1. Describe ichthyosis and its varieties. 2. How does chronic eczema of the palms of the hands appear and how is it treated? 3. Describe lichen planus Wilson, its varieties and mention the treatment. 4. Describe mascular syphilids, or syphilitic roseola. 5. When should the treatment of syphilis be commenced and how should it be conducted? 6. Define hypermetropia, how does it occur, and how is it corrected by lenses? 7. Describe catarrhal conjunctivitis. How is it treated? 8. What is atrophic rhinitis? How is it cured? 9. Describe chronic catarrhal inflammation of the middle ear. 10. Describe perichondritis of the laryngeal cartilages.

PATHOLOGY—1. Name the different kinds of necrosis. 2. Describe the pathology of pyosalpinx, 3. Describe the microscopical appearance of a tubercle. 4. Name the different kinds of aneurysm. 5. Define pyemia, septicemia, toxemia and bacteremia.

Medical News.

Dudley P. Allen has left for a trip around the world. Before leaving he tendered his resignation as Professor of Surgery in the W. R. U. Medical College and as Visiting Surgeon to Lakeside Hospital.

H. H. Drysdale and C. H. Clark have returned from visiting the psychiatric clinics of Europe.

Geo. Bourne Farnsworth has opened an office at 2047 E. Ninth St. and will limit his practise to obstetrics.

J. M. Ingersoll, O. T. Thomas and W. B. Chamberlin have removed their offices from 318 Euclid Ave. to 614 Osborn Bldg.

H. L. Ambler, D. D. S., Cleveland, in looking over the earliest files of the newspapers of this city for material for a History of Dentistry in Cleveland, found the following interesting items:

"The American Lancet for sale at the Cleaveland bookstore." (From the Cleaveland Daily Advertiser, Dec. 7, 1831.)

"Worthington Ohio Medical College. Reformed. The regular fall and winter course of lectures commences the first Monday in October and closes the first Monday in April. The arrangement is as follows: T. V. Morrow, M. D., on Theory and Practice of Medicine, Anatomy, Physiology and Operative Surgery, eight times a week. I. G. Jones, M. D., on Obstetrics and Diseases of Women, three times a week. D. L. Terry, M. D., on Materia Medica, Pharmacy and the Principles of Surgery, daily. J. R. Paddock, A. M., on Botany and Chemistry, daily. Ticket for fall and winter course $60.00. Spring and summer course $25.00. A full course of studies $150.00. Diploma $10.00. Whenever a student is qualified to sustain a thorough examination in all the departments of medical science he is permitted to graduate. Boarding $1.00 per week. Boarding, room, lodging, washing, firewood and candles $1.50 per week, during spring and summer; during fall and winter, $1.62.

"The public are requested to beware of imposters, as there are many who claim to be graduates of this school, who, perhaps, never saw it, and who are as ignorant of the Reformed or Botanical System of practice here taught, as they are of medical science in general. T. V. Morrow, M. D., Prest." (From the Cleaveland Whig, Sept. 17, 1834.)

"Dr. J. Mills has accepted the appointment of Town Physician." (From the Cleaveland Weekly Whig, April 14, 1835.)

"The subscriber hereby notifies the public that he has this day filed a petition with the City Clerk, for a license to sell Soda Water and Carbonated Mead at his Drug Store on Water St. B. S. Lyman." (From the Cleaveland Whig, June 2, 1836.)

The Robinwood Hospital Training School for Nurses, Toledo, held its annual commencement exercises June 31, Ada Florence and Belle Corson receiving diplomas.

A. N. Harrison, Bowling Green, has been commissioned First Lieutenant and Assistant Surgeon in the Ohio National Guard and has been assigned for duty with the Second Infantry.

Robert J. Walker, Toledo, died of mitral incompetency, July 8, while en route from northern Michigan to Toledo. His office on Main Street in Toledo is now occupied by Dr Coultrap, formerly on the resident staff of Toledo Hospital.

The following graduates of the Toledo Medical College passed the recent examinations of the State Board: Maude Marks, Arthur Marks, Edgar Curtiss, Paul Gintzel, Edwin Vetter, Harvey Trumbull, Frank Klopfenstein, and Victoria Nash.

R. C. Longfellow, Toledo, has been given the degree of M. S. by St. John's College for meritorious laboratory service.

Toledo, in spite of the sanity of her Fourth of July festivities, had one tetanus case resulting from a celebration wound.

E. C. Unckrich of Toledo will be associated with Frank Jacobi, 415 Colton Building, and will limit his practise to eye, ear, nose and throat diseases.

The Muskingum County Medical Society met July 13. The following program was presented: 1. Some Observations on Obstetrics, W. C. Bateman. 2. Part of Our Therapeutic Armamentarium, Simeon Kelly. 3. Report of a Case of Cesarean Section, W. A. Melick. Several unsuccessful attempts had been made to deliver the woman with forceps after she had been in labor for two days. The section was finally performed at the farmhouse, as her condition was such that it was impossible to remove her to a hospital. The child was dead, but the mother did nicely. 4. Report of a Case of Placenta Previa, C. H. Higgins. In this case there was no hemorrhage until labor had begun. 5. J. R. McDowell, as a member of the Public Education Committee, reported that places for lectures had been secured on the programs of all the women's clubs in Zanesville for the next year. Arrangements had also been made for a lecture before the teacher's institute, for one before a large Sunday school convention and in all probability for several in the schools of the city.

J. G. F. Holston, Jr., Zanesville, who left on July 23 for a three months' trip through Europe, will visit the clinics of England and Germany.

H. R. Geyer, Zanesville, has taken into partnership E. M. Brown, formerly of Amelia, Ohio.

Major J. H. Wright, New Lexington, Capt. F. G. Mitchell, Marietta, Capt. W. H. Knauss, Newark, and Lieut. J. R. McDowell, Zanesville, all of the Medical Corps, O. N. G., left on July 24 with their regiments for an eight days' maneuver camp at Marietta, Ohio.

The Northern Tri-State Medical Association held its thirty-seventh annual meeting Tuesday, July 12, 1910, at Elkhart, Indiana. The following papers were presented: 1. Gonorrhea in the Female, S. C. Loring, Plymouth. 2. Functional Tests of the Hearing as an Aid in Diagnosis, Albert E. Bulson, Jr., Fort Wayne. 3. The Differentiation of Cholelithiasis from Gastric and Duodenal Ulcer, C. N. Smith, Toledo. 4. Spinal Anesthesia, J. H. Jacobson, Toledo. 5. The Less Common Fractures (Lantern Demonstration), P. M. Hickey, Detroit. 6. The Ocular Factor in Certain Neuroses, Charles Lukens, Toledo. 7. Some Points in Kidney Surgery, Miles F. Porter, Fort Wayne. 8. The Possibility of Curing a Carcinoma of the Uterus by the Radical Abdominal Operation with a Report of Thirty-eight Cases, Rueben Peterson, Ann Arbor. 9. Public Address on Tuberculosis (Lantern Demonstration), Victor C. Vaughan, Ann Arbor.

The Surgical Section of the Academy of Medicine of Toledo and Lucas County met Friday, June 24. The program was as follows: 1. The Anatomy and Practical Consideration of the Rectum, Paul Hohly; discussion opened by Chas. F. Tenney. 2. Treatment of Prolapse of the Rectum and of Internal Hemorrhoids, James A. Duncan; discussion opened by James Donnelly. 3. Colostomy for Rectal Stricture, P. J. Bidwell; discussion opened by G. M. Todd.

The Ashtabula County Medical Society held its fifty-fourth regular meeting Friday, June 10. R. E. Skeel, Cleveland, presented the paper of the evening upon The Prognosis and Treatment of the Common Surgical Diseases of the Abdominal Cavity.

The Erie County Medical Society met at Ruggel's Grove Wednesday, July 27. The following program was presented: 1. Graves' Disease, P. F. Southwick. 2. Diagnosis and Treatment of Dislocations of the Larger Joints, W. H. Pollock. 3. Etiology and Treatment of Chronic Diarrhea, J. P. Esch. 4. Indications and Contraindications for Curettage, J. G. Griffin.

The American Public Health Association will hold its thirty-eighth annual meeting in Milwaukee, Wisconsin, September 5 to 9 next. Representatives from many of the national organizations working in the interest of the public health have been invited to be present and to discuss methods for the correlation of the work of such organizations, and for cooperation with a view to increasing efficiency and economy. Sanitary engineering will occupy a conspicuous place on the program. This Association is the oldest national sanitary organization in the United States. Its membership extends over the United States, the Dominion of Canada, Mexico and Cuba. Information concerning it can be obtained by addressing Wm. C. Woodward, Secretary, Washington, D. C.

The Ohio State Medical Board held a meeting on July 5 at which the following motion, which will be of general interest to the profession and especially to those contemplating a course in medicine, was unanimously carried: "Moved: That recognition by the State Medical Board be withdrawn from medical colleges located in Ohio that do not require for matriculation a certificate of admission issued by the Entrance Examiner of this Board, and that all colleges in the State shall file with the Secretary of the Board a complete list of matriculants on or before November 15 of each year." The purpose of this ruling is self-evident. Those desiring to pursue the study of medicine should show documentary evidence of proper preliminary education before the medical course is begun. The medical requirements are too exacting for one to divide the time between the professional studies and those which should have been completed before the study of medicine was contemplated and too serious to permit those not sufficiently qualified to attempt it.

Changes in the personnel of the Medical Faculty at the University of Pennsylvania: The Trustees of the University of Pennsylvania have announced recently certain changes in the personnel of the teaching staff to go into effect at the beginning of the next academic session, September 1, 1910.

To fill the Chair of Theory and Practise of Medicine made vacant by the resignation of James Tyson, David L. Edsall has been transferred from the Chair of Pharmacology and Therapeutics and the vacancy in the latter will be filled by the appointment of A. N. Richards, now Professor of Pharmacology in the Medical School of the Northwestern University.

There has been received $100,000.00 for the endowment of a Chair of Physiological Chemistry and Alonzo Englebert Taylor of the University of California will be its first occupant.

Richard M. Pearce, of the University and Bellevue Hospital Medical College of New York, has been appointed Professor of Pathology. He will also direct the work of the department of Research Medicine recently established by an endowment of $200,000.

Allen J. Smith, the present Dean of the Medical School, will be the occupant of the new Chair of Comparative Pathology and be at the head of the newly instituted courses in Tropical Medicine.

Paul Lewis, who will have charge of the Laboratory of the Phipps Institute for the Study, Prevention and Treatment of Tuberculosis, now an integral part of the University, has been elected Assistant Professor of Pathology.

Mihran K. Kasabian, Philadelphia, Pa., one of the best known authorities on Roentgenology in this country and the author of a standard textbook upon the subject, died recently from carcinoma which resulted from overexposure to the x-rays. He was one of the early workers in this field, at a period when the dangers from frequent exposure to x-rays was not sufficiently appreciated. The lesion, beginning upon the hands, was operated upon but widespread metastases developed and ultimately caused his death.

The first annual meeting of the American Association for Study and Prevention of Infant Mortality will be held in Baltimore, Md., in November. A special report on birth registration is being prepared under the direction of Cressy L. Wilbur, Chief of the Division of Vital Statistics of the Bureau of the Census. The report of the committee on Birth Registration will be presented at the session on Municipal, State and Federal Prevention of which Wm. H. Welch is chairman. The meeting will open with a general session on November 9. On the next two days there will be four special sessions as follows: 1. Municipal, State and Federal Prevention. 2. Medical Prevention. 3. Educational Prevention. 4. Philanthropic Prevention. Every section of the country is represented in the directorate. The headquarters of the association are in the Medical and Chirurgical Faculty Building, 1211 Cathedral Street, Baltimore, Maryland.

Deaths.

Oscar F. Edwards, New Lebanon, Ohio, died July 8, aged 74.
William D. Cole, Ansonia, Ohio, died July 8, aged 63.
Robert J. Walker, Toledo, Ohio, died July 7, aged 48.
J. Louis Gahm, Jackson, Ohio, died July 6, aged 48.
Adam A. Hessell, Put-in-Bay, Ohio, died July 7, aged 42.
Orin A. Lyon, Akron, Ohio, died June 17, aged 55.
Burwell P. Goode, Cincinnati, Ohio, died April 23, aged 77.
Asa C. Wilton, Youngstown, Ohio, died June 16, aged 61.
Lorin N. Pontius, Gallipolis, Ohio, died June 20, aged 56.
Edwin L. Moodie, Chatham, Ohio, died July 2, aged 36.

The Cleveland Medical Journal

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The Management of Scarlet Fever in the Home

By EDWARD F. CUSHING, M. D., Cleveland.

Ker of Edinburgh in his recent and admirable book, "Infectious Diseases," says, of scarlet fever, "The majority of patients are nowadays treated in hospital". Would that the same fortunate conditions obtained in this land where in most communities quite the contrary is the rule, and the individual with scarlet fever must be cared for at home! There falls to the general practitioner therefore the necessity of solving in the patient's household the problems of isolation which form so important a part of the management of the disease. Even in the houses of the well-to-do, to obtain proper accommodation for patient and nurse is often difficult and to accomplish efficient isolation requires careful planning and oversight; in the homes of the poor, satisfactory quarantine is well-nigh impossible to secure. Occasionally the chance presents itself to the physician, when a family in his clientele is building a home, to suggest that some suite of rooms and bath, whatever is to be its ordinary use, be planned for occupancy and isolation in case of contagious illness, and such an opportunity should always be grasped. Painted walls, hardwood floor, open fireplace, and communication with a bathroom, do not spoil a nursery, while making it more efficient for the possible sickroom purposes.

As one sees scarlet fever in private practise, the symptoms of sudden illness, which mark the onset, lead ordinarily to a visit of the medical attendant before the rash has developed. Often under such circumstances the examination discloses besides the fever and other signs of constitutional disturbance nothing beyond appearances in the throat which suggest a simple follicular tonsillitis. Not to be led astray, it is well therefore in every case of apparent tonsillitis to have scarlet fever in mind, as well as diphtheria, to reserve decision, keep the patient isolated and make a second visit within the 24 hours to search for an eruption. It has probably happened to most physicians to their mortification to have an unqualified diagnosis of tonsillitis falsified the next day by a fully developed exanthem. In the presence of a rash, the errors which may be committed are more likely to consist in mistaking for scarlet fever some eruption which more or less closely resembles it, than in the contrary misconception; or they come from missing the slightly developed and partial exanthem of certain mild cases of the disease. The latter fault is one of negligence; as a check to the former in puzzling cases a blood examination is often of value, the eosinophilia of scarlet fever helping to identify the true exanthem and exclude the spurious, whether this be an accidental or prodromal rash of other exanthemata, a drug or serum eruption, or an erythema of whatever origin.

The diagnosis of scarlet fever made, it becomes at once the physician's duty to plan not only for the welfare of the patient, but for the security and peace of mind of the family as well. Parental anxiety in the presence of possibly serious illness is increased by the complexity of the problem which the care of contagious disease within the home involves; and thorough familiarity with all that it means to quickly and satisfactorily prepare the sick room, provide for the needs of patient and nurse, and establish an efficient quarantine with a minimum of disturbance of household comfort and routine, is incumbent on the attendant. After taking steps to obtain promptly a suitable nurse, and nurses with experience in the technic of scarlet fever care in the home are not too common, the apartments to be used for the illness should be inspected, a large room with open fireplace and connecting bathroom being chosen if possible; and directions should be given for removing rugs and hangings, upholstered furniture, books and pictures, and the contents of bureau drawers and closets, leaving only the essential furnishings of beds for patient and nurse, table and chairs, window shades and a screen. If, however, the room first occupied by the patient is to continue in use it is unnecessary to strip it so completely since fumigation of its contents is already obligatory; and any articles which are removed must undergo prompt disinfection.

When the room has been selected, the physician should next write out a detailed list of the drugs, utensils and supplies of all sorts which the necessities of the invalid's care and the isolation demand, and see that the various essentials not already at hand are promptly procured in order that from the first and without confusion all needs should be anticipated and provided for. Such a list for the sickroom equipment should comprise the following articles:

Utensils.

Bed-pan and chamber.
Fountain syringe.
Feeding-cup or glass tube.
Hotwater bag.
Ice bag (for the neck).
Two atomizers.
Nail brush.
Spirit lamp.
Two test tubes.
Graduate glass (pint).
Arnold sterilizer.
Gas or electric heater (for boiling water).

Drugs and Disinfectants.

Carbolic acid.
Formalin.
Alcohol.
Talcum powder.
Solution for throat spray.
Ointment for the skin.
Toilet pumice stone.

Other Supplies.

Rubber gloves for nurse and doctor.
Surgical gowns with hood.
Rubber sheet for the bed.
Absorbent cotton.
Cheesecloth for handkerchiefs, wash-cloths, etc.
Tin foot tub as receptacle for soiled linen.
Jug for carbolic solution.
Nursery ice-box for the milk and drinking water.
Supply of bed-linen, nightgowns, toilet articles.
Safety-pins, matches, soap, etc.

The list should be discussed with the mother; and explanations made and questions answered as to the part in the quarantine adjustments the family and servants must play. Ordinarily the mother herself has so far cared for the sick child and must before again mingling with others, bathe, wash her hair and change her clothes. If there are children of school age, they should if possible be sent to stay elsewhere in the hope that they may have escaped contagion and may after the lapse of ten days return to school, meanwhile being under observation and control. It must be made clear that no one is to enter the patient's room save the person, usually the mother, who, at a definite hour is to take the nurse's place during her outing. Visitors should be tabooed and the members of the family cautioned to keep away from other households and public gatherings. The management of the daily supplies for patient and nurse such as the latter's meals, the milk, the drinking water, the ice, the kindling and fuel for the fire, has also to be considered as well as the disposition of the laundry and other articles that must come from the sick room. As the invalid is to live on milk alone for a fortnight, some two quarts are needed daily, and should be obtained from the best source available, for unclean milk may upset the digestive organs of a fever patient as easily as those of a baby. The milk bottles themselves are not to be taken to the sickroom, but their contents transferred to a clean pitcher when the milk is received. Otherwise the bottles cannot be returned to the dairy. The conversation concerning these details finished, the orders for the nurse should next be written, that she may assume duty with a full understanding of the requirements of treatment:

Nursing Directions.

Room temperature 60°—open window.
Temperature (rectal) a. m. and p. m.
Tub bath (100°, a. m. and p. m. or hot sponge bath).
Anoint skin after bath.
Spray throat hourly when awake.
Ice bag to neck if glands are swollen and painful.
Enema daily if necessary.
Milk, ounces VIII every four hours during day.
Water freely, at least three pints daily.
Measure urine and test daily for albumin.
Disinfect bed- and body-linen with carbolic solution, 1-40.

The nurse in preparing for attendance on the scarlet fever patient requires a somewhat different equipment from the usual one. Uniform dresses, caps and aprons are superfluous in this sick room, for a surgical gown should be worn as an outside garment and the hair should be covered with a hood or cheesecloth turban. Cheesecloth squares should be used for her own handkerchiefs as well as those of the patient, to be burned after use, for every attempt should be made to keep laundry needs as small as possible. In all details of costume and outfit simplicity should prevail and the barest essentials should suffice. To aid in guarding her own health during the weeks of confinement and of close contact with contagion, rubber gloves should form part of the nurse's equipment, to be worn when the patient is bathed or otherwise handled. The sore throat from which the scarlet fever attendant so often suffers can usually be prevented by this protection of the hands, but the nurse should also be scrupulous in washing and disinfecting her hands before eating, and her meals should be taken as far from the patient's bedside as possible. Several times a day also she should spray or gargle her own throat; and a daily outing in the open air is indispensable.

On arrival at the patient's house the nurse's first care after consulting the physician's orders and assuring herself of the welfare of the patient, is to superintend the preparation of the sickroom and assemble the needed supplies, and this is usually a considerable task. When the room is ready and properly equipped and the patient transferred, the nurse should have secured an entire understanding with the mother as to the smooth administration of the improvised contagious hospital quarters. The daily supplies, the milk, water, ice, fuel, etc., should be left at a definite hour outside the sickroom door. The nurse's meals and those of the patient when the stage of milk diet is over, must be brought here also, but cups and saucers, table utensils, sugar and condiments, tea and coffee, should be kept in the sick room and not carried back and forth; and food remains should be burned in the room. Such plates and dishes as must be returned should be boiled in the Arnold sterilizer. A large tin foot tub kept in the bathroom serves to receive the changed bed and body-linen of patient and nurse. The soiled linen in this receptacle is kept soaking in 1-40 carbolic acid solution, and once a week the clothes wrapped in one of the damp sheets can be thrown from the window and carried at once to the laundry to receive immediate boiling, after which the rough dried clothes may be cared for as part of the family wash.

On a clothes-tree outside the room should hang the physician's long, hooded gown and on a table should be placed his rubber gloves, in a basin of some antiseptic solution, and an atomizer containing formalin to spray and disinfect his shoes. At the doctor's visit the gown is donned and the hood pulled over his head. Unless there is need to handle the patient when rubber gloves should be worn, the arms may be kept inside the gown. A stethoscope or other needed appliances should be left permanently in the sickroom for necessary use. The visit should be made as brief as possible and on leaving the attendant's face should be bathed in antiseptic solution, the gown tossed back into the room for disinfection by the nurse, and the shoes sprayed with formalin.

The mother, on her daily visit to relieve the nurse, should similarly wear a surgical gown, protect her hair and cover her hands with rubber gloves and her feet with canvas shoes or rubbers. She should not caress nor even touch the patient unless necessity demands, but spend the time in reading aloud, chatting or diverting the convalescent in whatever appropriate fashion. Toys, papers, books and flowers taken into the sickroom must there remain to be destroyed or disinfected at the end of the illness. If a pet dog or cat is a member of the household, care must be taken that the inquisitive animal does not take the opportunity of the mother's visit to simultaneously dart into the room. When the mother takes her departure she should have a long walk in the open air and bathe and change before mingling with the family.

The nurse's outdoor costume is kept in some convenient near-by room or closet. She doffs her gown and canvas shoes as she leaves the isolation quarters, quickly assumes her outer clothing and leaving the house takes her outing in the form of a brisk walk, avoiding public conveyances and making no visits. For weeks seeing and conversing with no one but an ailing or convalescent child, the nurse's daily excursions make for cheerfulness and equanimity as well as for health and should be insisted upon by the physician.

In the every day care of the sickroom, there should be no dry dusting or sweeping. The woodwork should be wiped off with a cloth dampened in carbolic solution and the floor mopped or brushed after scattering bits of newspaper moistened with antiseptic fluid.

Scarlet fever patients are kept in bed for three weeks as a rule, even in the absence of all complications and during this period a purely milk diet suffices for their needs with abundance of water to drink given at frequent and definite intervals as in the treatment of typhoid fever. Distilled water, if attainable, is easier to take in large quantities without a sense of repletion. For the first day or two of the illness no milk, but water alone is desirable if there is a tendency to nausea and vomiting. During the febrile stage of the disease the two daily tub baths or the morning and evening sponges are soothing and help in securing rest and sleep. A thorough soaping with the bath adds much to the feeling of cleanliness and comfort. Following the bath an inunction with eucalyptus and carbolic acid oil or ointment relieves the smarting and burning of the skin and perhaps in some measure serves to accomplish disinfection. The mouth should be kept scrupulously clean and this is usually an easy task in cases not severely ill if much water is taken internally. A foul oral condition as well as severe faucial lesions may originate serious glandular and aural complications. The throat should be sprayed often with Dobell's solution or with a few drops of carbolic acid to the ounce of lime water, unless the necessary manipulations cause struggling and fighting on the part of the child, when they are better omitted and occasional large irrigations of hot water from the fountain syringe substituted, the child being under complete control meanwhile. If the glands in the neck are painful and swollen, ice bags are usually most grateful and should be constantly applied.

All through the illness and early convalescence the nurse should be ever on the alert for suspicious symptoms of middle ear infections, whether pain or deafness, unusual drowsiness, or unexplained rise of temperature; and she should also daily measure the urine voided, see that the out-go of fluid does not fall below that ingested and test each specimen passed for albumin by boiling the urine in a test tube over the spirit lamp.

In the fourth week of the patient's illness he is usually allowed to be out of bed and the diet at the same time is gradually increased by the addition of starchy foods and fruits and finally of eggs and fish and meats. With the possibility of late and unexpected renal complications in mind the urine must be measured and watched during all this period. With the completion of desquamation the stay in quarantine comes to an end after a period of some six or eight weeks, unless the persistence of a purulent discharge from nose or ear or suppurating gland makes longer isolation necessary. The tedious peeling on the palms and soles may be somewhat hastened by rubbing with toilet pumice stone after soaking in the bath, and the inunctions should be continued during all the time of desquamation for comfort and to accomplish what disinfection is thereby possible.

When the period of detention has elapsed, the patient should be given a bath and the hair washed in a 1-5000 corrosive sublimate solution. Then wrapped in a sheet dampened in a bichlorid solution, the child is received outside the bathroom door by the expectant mother and is dressed in clean clothing, ready to join again the family circle. The nurse, remaining, prepares the room for fumigation, pasting paper strips over cracks, about doors and windows and over key holes, destroying such articles as can not be disinfected and opening and spreading bedding and other articles for exposure to the formaldehyd fumes. She should in turn take a bichlorid bath and shampoo, leaving her garments in the sickroom. The rooms should remain closed and exposed to the formaldehyd vapor for six hours at least. After fumigation, floors and wood work of all sorts in the rooms should be scrubbed with 1-1000 bichlorid solution and the walls should be rubbed with the cleaner's composition.

The Location and Nature of Injuries of the Gastro-Intestinal Tract Following Abdominal Trauma, with the Report of an Injury of the Small Intestine Resembling a Bullet Wound of Entrance.

By C. E. BRIGGS, M. D., Cleveland.

It is the purpose of this brief communication merely to call attention to a few striking points regarding the location and nature of traumatic lesions of the stomach and intestine exclusive of penetrating wounds, together with the report of a case, and not to attempt a broad consideration of the subject.

The relative frequency of these lesions is indicated by a report of 8,000 injuries of all kinds collected a few years ago from the records of St. Thomas's Hospital, London, in which 3.59% were injuries of the abdomen, of which number 23.59% were of the stomach and intestine. Approximately 85% to 90% of the lesions are found in the small intestine, a little more than half the remainder being found in the large intestine, the rest in the stomach. In a somewhat extensive consideration of this subject by Petry in the *Beiträge zur klinischen Chirurgie,* 1896, based on a collection of 219 cases, 172 (78.5%) were of the small intestine, 26 (11.9%) of the large intestine, and 21 (9.6%)

occurred in the stomach. Of 113 cases of intestinal injury collected by Curtiss in his Cartwright paper of 1887, 109 (94.4%) were of the small intestine, while only 4 (3.6%) occurred in the large intestine. A small proportion of those in the small intestine are found in the duodenum, about 8%, most of them occurring in the upper meter of the jejunum or lower meter of the ileum. Of those in the large intestine over 50% are found in or near the cecum. Most of the injuries are found in the lower half of the abdomen; those in the upper half, especially in the stomach, are likely to be associated with injuries of the adjacent vicera, spleen, liver, kidneys, or pancreas.

These lesions may be grouped into four general classes, contusions, ruptures, lacerations, and separation of the viscus from its mesentery, although, perhaps, the latter class of cases should be considered solely as injuries of the mesentery. The injuries may involve one or all of the layers progressively in either direction, in or out; the mucosa may be severely injured, the serosa still intact or only slightly hurt, or the serosa and muscular coats may be completely divided, leaving the mucosa intact. When the wall is completely involved the peritoneal cavity is almost always entered, the occasional exceptions occurring in the posterior injuries of fixed portions of the intestine, as duodenum or colon. They are usually single, but may be multiple, rarely exceeding two or three lesions; if multiple, they may be close together or widely separated, even involving different parts of the digestive tract.

Contusions are of all degrees of severity. The graver cases are associated with hemorrhage into or between the layers involved, most frequently separating the mucosa; this may be so extensive as to result in sloughing of the mucous membrane, and as much as 150 cm. has been known to have separated and passed off in this way; or the necrosis may extend gradually through all layers, resulting in delayed perforation. The distinction between lacerations or tears, and ruptures or bursting injuries may be entirely artificial, and is certainly often difficult to recognize, but in a general way such a distinction is thought to exist, although of no practical importance. In ruptures the edges of the lesion are rather clearer cut and more sharply defined, the muscular layers being intact beyond the point of injury. In lacerations the edges are more or less contused, the muscular layers being injured beyond the line of separation; the impression on the intestine of the object causing the injury has even been noted, though this seems rather fanciful.

These lesions in the movable portions of the small intestine occur most frequently opposite the mesenteric border, especially in ruptures, the bursting variety of injury. This portion of the wall has been shown experimentally to be the weakest part of the intestine, and clinical results have apparently demonstrated the correctness of this view. Lacerations, on the other hand, are perhaps more frequently found nearer the mesenteric border, and many of these injuries involve the mesentery. The clean cut ruptures are more likely to lie transversely, involving a varying portion up to complete solution of the entire wall, and tearing of the mesentery. This is probably due to the greater strength of the circular muscular layer, the weaker longitudinal layer giving way more readily. Lacerations are more likely to lie longitudinally or even obliquely, and irregular tears have been observed, even pointed or rectangular flaps of various sizes. Muscular contraction may alter the appearance of the injury, contraction of the circular fibers causing more distortion than the longitudinal layer. In complete transverse injury circular muscular contraction has been noted to such a degree that both open ends have been puckered down as if held by a purse string suture, successfully resisting extravasation. This muscular contraction is less marked in the cases usually classed as lacerations, one explanation being the injury sustained by the muscular layers for a distance from the opening. Tearing of the bowel from the mesentery without injury of the wall is most likely to be found at the junction of fixed with movable intestine, as the duodenojejunal angle and the region of the ileocecal valve. Most of the injuries found in the duodenum have been transverse, complete separation having been observed at both ends. Of those in the continuity of the duodenum, the majority have been on the anterior wall; the writer has observed one case on the posterior wall.

In the large intestine the lesions are usually on the peritoneal surface, but may lie extraperitoneally in the fixed portions. Of the 26 cases in Petry's series, seven occurred in the cecum, eight in the ascending, four in the transverse, two in the descending colon, and five in the sigmoid. In the stomach the injuries are almost always near the lesser curvature, usually near the pylorus, and are said to be about equally divided between the anterior and posterior surfaces. The lesions are usually longitudinal slits lying parallel to the lesser curvature, but there may be great variety in the nature of the opening, and the inner and outer opening may be obliquely separated, connecting an interstitial canal.

Small round openings, such as the one to be described, have apparently been rarely observed. They are said to have been caused by somewhat pointed though not penetrating objects, as the end of a stick; they may be short longitudinal openings which are drawn out laterally by the contraction of the severed circular fibers. They are probably always plugged more or less completely by protruding mucous membrane, as is the case with most intestinal injuries, if not too large.

The case observed was that of a German carpenter, 48 years old, who was struck in the abdomen by the end of a plank about 3:00 p. m. He was immediately taken to an adjoining hospital but he refused treatment and walked home. He was later seen by his own physician and was brought to Lakeside Hospital about 8:00 p. m. The temperature was 101° by rectum, pulse 96, respirations 23. There was a small superficial abrasion in the left upper quadrant of the abdomen, the only visible evidence of injury. The abdominal wall was held rather rigidly and was markedly retracted. Abdominal respiration was very limited, scarcely perceptible in the lower half, and of a board-like character hinging at the symphysis pubis. There was a moderate degree of general sensitiveness, possibly a little more marked in the left upper quadrant. There was dulness on percussion except in the central portion of the upper half. The abdomen was opened at 9:30 p. m., six and one-half hours after the injury. A moderate amount of free bloody fluid was encountered, including some clots. Inspecting the left upper quadrant, a laceration of the small intestine was disclosed, about 3.5 cm. long, extending obliquely from a point about 1 cm. from the mesentery toward the free border of the intestine. The edges were somewhat irregular; the opening was completely plugged by everted mucous membrane, and there was no perceptible escape of fecal matter. The lesion was in the upper part of the small intestine as shown by the arrangement of the vessels, the thickness of the walls, and the presence of the distended lacteals. The opening was closed with linen thread. About 20 cm. from this point the lesion under consideration was discovered. It was about 5 mm. in diameter, situated about one-fourth of the circumference from the mesenteric border, and was completely plugged by protruding mucous membrane. The striking feature was the very close resemblance which the lesion bore to a bullet wound of entrance, and would have been so regarded by any one seeing the specimen out of relation to the surroundings and history. It was closed with a linen suture. Within a distance of about 40 cm. from this injury there were several apparently less important lesions, consisting of abrasions to the peritoneum of the mesentery and the intestine, without visible injury to the blood supply; these injuries were repaired with linen thread. Reasonable inspection failed to show any further injury. The abdomen was closed without drainage. The convalescence was uneventful until toward the end of the fourth day, when a sudden and unexpected change took place, and a condition of extreme collapse supervened. It was suspected that perforation had occurred, possibly at one of the sites of minor injury, the gravity of which was not apparent at the time of operation, but the depression was so sudden and extreme that further interference seemed hopeless, and he died within a few hours. No autopsy was permitted.

118 Lennox Bldg.

Stokes-Adams Disease.

By M. J. LICHTY, M. D., Cleveland.

It is not my purpose to discuss Stokes-Adams disease to any extent but to bring the subject up for consideration by reporting briefly a case of marked bradycardia which had some very striking symptoms of this condition.

Whether the term could be properly applied in the diagnosis of this case might be questionable, though the patient had several such very positive physical signs that this conclusion might be warranted. Some observations of the pulse with the polygraph were also unusual and deserve attention. Interesting as the subject of Stokes-Adams disease has been to many men whose names are mentioned in the literature referring to it, one after all regrets that the pathology of the condition is still unknown, and likewise appreciates that the symptoms are not constant. The observations of physiologists and especially the remarkable work of His have made the subject more interesting recently than at any time before. While changes in the heart muscle itself, arteriovascular changes, and disturbances of the bundle of His are most generally found in patients of the later years of life, the phenomenon in younger patients, in whom no such pathology exists, is still to be explained by some other less definite lesion.

The case to be presented is that of a man 57 years of age. His family history is negative. His occupation was that of a laborer. He was a man of good habits and not alcoholic; he smoked somewhat. At 32 he had gonorrhea and smallpox, measles at 40, and a severe attack of rheumatism at 47. From that age until the last year he had fairly good health, though he noticed an increasing dyspnea. In Dec., 1909, he suffered from pain and stiffness in the knees and some of the other large joints. His case was very soon, and very properly, no doubt, diagnosed

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Read before the Academy of Medicine of Cleveland, February 18, 1910.

as inflammatory rheumatism, with elevation of temperature and rapid pulse. The attending physician, Dr F. Y. Allen, noticed an hypertrophy and dilation of the heart with a soft mitral systolic murmur transmitted to the axilla. The arteries were very hard and the pulse full. There was some edema of the feet. In the course of treatment for the rheumatism and on account of failing compensation of the heart digitalis in rather small doses was prescribed. The patient was referred to St. Luke's hospital Jan. 1, 1910. The same physical signs described were noticed. The urine contained only a slight trace of albumin. The red blood cells and hemoglobin were reduced to 80%, while the leukocytes numbered 25,000 to the c.mm. For four days the patient's temperature and pulse remained slightly elevated above the normal. His general condition changed but little. He suffered much pain and constant distress over the heart. Alkalies and salicylates were administered. Digitalis in five drop doses was continued, hot packs were given and local fomentations were applied to the joints. The chart shows that on the fourth day after admittance to the hospital his pulse suddenly dropped from 100 beats per minute to 54. A rather surprising and unexplained fall. On the sixth day the pulse fell to 30 and 28, and I counted it at 26. The blood pressure was 150 mm. and the cardiac impulse was vigorous, almost shaking the patient's entire body. When the pulse was at its lowest, 26 per minute, the patient had much distress over the heart, his expression was very anxious and he complained of dyspnea and syncope. At that time the heart was still enlarged, though there was no cyanosis. By auscultation I could hear nothing but the infrequent systolic contractions, the mitral murmur and a loud aortic second sound. The radial pulse was also 26, synchronous with the cardiac systole. During a period of four to five days, however, when the pulse was at its slowest I could notice sometimes one and sometimes two faint impulses in the suprasternal notch between each forcible heart beat. This impulse was also palpable and very interesting to observe as it moved the palpating finger between the strong beats. When after a few more days the pulse rate increased to 40 this extra impulse or systole could not be seen or palpated. However every second or third beat of the heart gave a stronger impulse to the carotid arteries than the intervening heart beats. This was not noticed in the brachial or radial pulse. At this time when the pulse was 40 to 42, pulse tracings of the brachial and carotid arteries were taken with Kraus' polygraph. I regret very much that the instrument did not happen to be in working order five days earlier when this patient's pulse was at its lowest, and when the faint extra impulses could be seen and palpated in the suprasternal notch. Several tracings were taken at the time his pulse increased to 40 and 46 and at later dates, and they show a change in the condition especially in the carotid pulse. The tracings of the polygraph when the last observations were made only a few days before he left the hospital when the pulse was 80 show a very marked difference from the first tracings taken when the pulse was 40. The patient's pulse rate Feb. 12, 1910, when he left the hospital was 78 and his cardiac dilation and mitral murmur had disappeared, the joints seemed well, the edema of the feet was gone and the blood and urine were normal.

When the patient's pulse dropped suddenly so low the small doses of digitalis were of course discontinued at once, and nux vomica in 15 drop doses given instead. Atropin in doses of 1/300 to 1/100 gr. was given hypodermically four times daily and quite continuously. Later iodid of strontium gr. x was also given thrice daily. How much influence these drugs had upon the pulse rate and blood pressure is merely conjecture. The restricted diet, frequent hot packs, saline cathartics and ice cap over the heart may have done as much and more. This brief description of symptoms and physical signs of course gives rise to the question of a probable diagnosis.

While Stokes-Adams disease is not common it is, after all, an interesting study for even the casual observer and of almost equal curiosity is any case with an intermittent or constant bradycardia when the pulse falls to 30 and 26. Of the four striking symptoms of this condition, namely, bradycardia, slight convulsions, vertigo and syncope, with dyspnea, this patient had only one symptom, bradycardia, in a marked degree, and two others, vertigo and dyspnea, in a slight degree. And were it not for the slow pulse, which after all is not extremely slow for Stokes-Adams disease, the extra slight carotid impulses between strong heart beats as well as the peculiar sphygmographic tracings I would not hesitate to call it only a simple case of bradycardia of unknown cause excepting perhaps the small doses of digitalis. But these slight carotid impulses, one or two between each strong heart beat when the pulse was slowest, and the extra strong impulse transmitted to the carotid with every second or third heart beat, as shown by the polygraph when the pulse was increased to 40 or more, make me feel that there was an extra contraction of the heart muscle somewhere between the strong

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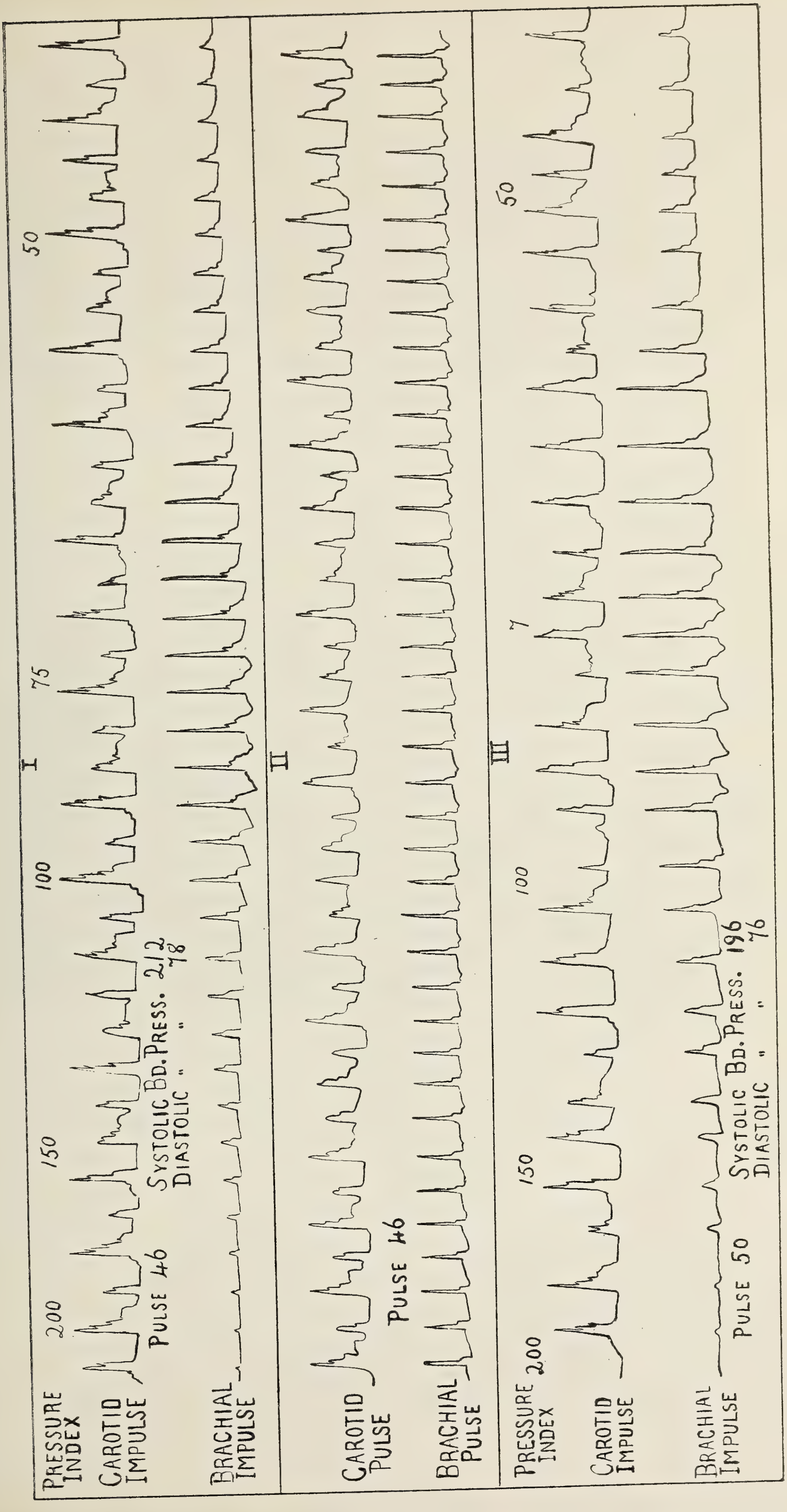
Fig. 1 shows tracings taken January 12, 1910. It demonstrates the carotid and brachial pulse with the blood pressure scheme. The brachial pulse was obliterated at a point 212 (a scheme not shown in the figure) which represents the systolic pressure. The greatest oscillation of the pulse index was at point 78 which represents the diastolic pressure. The carotid wave is synchronous with the brachial, but it shows with each second or third systole an extra strong impulse, which is supposed to be the result of an extra forcible contraction of the left auricle. Pulse rate 46.

Fig. 2 shows tracings also taken January 12, 1910 demonstrating the same carotid and brachial impulse without estimation of blood pressure. Pulse rate is 46. It is noticed that while every second or third carotid impulse is stronger than the others, the brachial impulse is very regular.

Fig. 3 shows tracings taken January 15, 1910. The carotid impulse was a little more regular. Systolic blood pressure was 196, diastolic 76, pulse rate 50.


PRESSURE INDEX
CAROTID IMPULSE
BRACHIAL IMPULSE
200
150
100
75
50
I
PULSE 46
SYSTOLIC BD. PRESS. 212
DIASTOLIC " " 78
II
CAROTID PULSE
BRACHIAL PULSE
PULSE 46
III
PRESSURE INDEX
CAROTID IMPULSE
BRACHIAL IMPULSE
200
150
100
50
PULSE 50
SYSTOLIC BD. PRESS. 196
DIASTOLIC " " 76

delayed heart beats, when the pulse was slowest, or later with each second or third contraction of the ventricle when the pulse became a little more frequent.

According to His and a number of physiologists this slight impulse transmitted only as far as the carotid is due to an extra contraction or two of the left auricle taking place regularly during the delayed interval of forcible contractions of the left ventricle. This theory seems most plausible. At the same time very competent observers, including Babcock, believe that the extra slight pulsations transmitted only as far as the neck and occurring one or more times between each strong systole are the result of regular and frequent contractions of the right ventricle sending its impulse backward into the jugular veins, rather than an extra contraction of the left auricle sending an extra slight impulse to the carotid arteries. Be that dispute as it may, I am sure that the extra impulse to the vessels in the neck of this patient occurring with each second or third beat of the heart, as the tracings show conclusively, demand some explanation beyond an ordinary bradycardia where the cardiac impulse, though infrequent, should be noticed just as frequently in the more distant vessels from the heart as in the most proximal. The bradycardia remained very constant in this patient for five weeks at the end of which his pulse suddenly increased from 60 to 90 and all the symptoms disappeared.

I have presented the case simply as a matter of interest. If there is no excuse at all to consider it as a case of Stokes-Adams disease then I maintain that the unusual phenomena of the carotid pulse as shown by the polygraph need some explanation.

1803 E. 82d. st.

Nephritis, a Complication of Impetigo, with Report of Two Cases.

By JOHN PHILLIPS, M. B., Assistant Professor of Medicine,
Western Reserve University, Cleveland.

Impetigo is a disease of very common occurrence, especially in children, and is characterized by the appearance simultaneously, or in rapid succession, of discrete, superficial, flattened, rounded or oval vesicles, the contents of which soon become seropurulent and dry to yellowish crusts. The eruption appears on the face, scalp, hands, and less frequently on other portions of the body.

The size of the lesions varies in diameter from that of a pea to a dime, and in some situations, as about the corner of the mouth, they may coalesce forming one or more irregular patches. Any scratch, mark or excoriation of the skin may by autoinoculation become the seat of characteristic lesions. Occasionally the eruption takes the form of large blebs, flaccid or quite tense—the so-called bullous form of impetigo. French pediatrists, notably Comby and Bergeron, have called attention to the occurrence of a form of stomatitis in impetigo. Cushing[1] has reported two cases of impetigo, in one of which there was a marked stomatitis, in the other a rhinitis with a purulent discharge from the left nostril, and has carefully reviewed the literature, which refers to the association of lesions on the mucous membranes in impetigo. He mentions the fact that Payne noted the occasional inoculation of the disease on orificial mucous membranes besides the mouth, with a resulting purulent coryza, conjunctivitis, keratitis or vulvovaginitis; and from the quite frequent combination of stomatitis and the whitlow-like lesions on the fingers used "hand and mouth disease" as a synonym of his own for the affection.

Bacteriological examination of the contents of the lesions gives in nearly all of the cases a pure culture of *Staphylococcus pyogenes aureus.* However the studies of Crocker, Leroux, Balzer and Griffon have shown that in some cases a streptococcus can be isolated from the early lesions of the skin and they regard this as the true causal agent of impetigo and that the presence of staphylococcus is due to a secondary infection.

Impetigo is usually regarded as a benign disease and the majority of dermatological textbooks mention no complications whatever. Guiard[2] in his recent admirable thesis "De la Néphrite dans l'impetigo Chez l'enfant" enumerates the various complications that may occur. Of these there are septicemia which is usually due to staphylococci; inflammations of the mucosa such as, conjunctivitis, blepharitis, keratoconjunctivitis, rhinitis with extension of the inflammation to the middle ear, and stomatitis; bronchitis and bronchopneumonia; gastro-intestinal lesions such as gastro-enteritis; cardiovascular inflammations, pericarditis, endocarditis, phlebitis; meningitis in which either streptococci or staphylococci have been found in the cerebrospinal fluid; suppurative arthritis and osteomyelitis; and renal lesions especially nephritis.

The following cases which I wish to report illustrate the occurrence of nephritis in the course of impetigo.

Case 1. M. G., male, aged three years, was brought to Lakeside Hospital, because of an eruption on his face and head, puffiness of his eyes, and swelling of his feet and legs. With the exception of an attack of whooping cough when he was six months old, the child had always been in perfect health. Ten days previous to his admission to the hospital the mother noticed a "breaking out" on the back of the head. The eruption at first looked like small blisters. These the boy scratched causing them to bleed. The lesions appeared next on the face, the hands and on various portions of the body. Two days before coming to the hospital his mother noticed that he was passing very small quantities of urine, his face was puffy, and that his abdomen was swollen so that his trousers would not button. He complained of headache and thirst and his appetite was gone.

Physical examination: The child is well nourished and his skin and mucous membranes of good color. Scattered over the face, scalp, the body and extremities are numerous encrusted lesions of impetigo. Pus exudes from the crusts on the scalp. There is considerable excoriation of the anterior nares and a profuse seropurulent discharge from his nostrils. His whole face is puffy; this puffiness is so marked about the eyelids that they are almost closed. His tongue is dry. The mucous membrane of his mouth and his tonsils are normal. There is considerable enlargement of his posterior cervical glands. His respirations are 40; his lungs are clear throughout to percussion and auscultation except that the breath sounds are somewhat distant at the bases. His heart dulness is slightly increased to the left; the aortic second sound is considerably accentuated but there are no murmurs accompanying or replacing either sound. His pulse is regular, rhythmic, of high tension, rate 120. The subcutaneous tissues of the abdominal wall are swollen and there is evidence of a small amount of fluid in the abdominal cavity. The lower border of the liver extends two cm. below the costal margin in the right mammary line. The spleen is not palpable. There are several encrusted lesions of impetigo over the lower extremities and considerable edema of the shins. The tendon reflexes are normal. The urine was deep amber in color, slightly turbid, acid, specific gravity 1022 and contained 2.5 grams of albumin to the liter. There was no sugar. Microscopic examination of the centrifugalized sediment showed a few pus cells and some red blood cells; there were many hyaline, both coarse and finely granular and a few pus casts. Examination of the blood showed red blood corpuscles 4,500,000, hemaglobin 68%, leukocytes 46,200.

The treatment consisted of milk diet, oleum ricini dram iii followed in two hours by magnesium sulphate dram i every half hour until six doses had been taken. Water was given in moderate quantity. Every four hours the patient was put in a hot bath followed by a hot pack. Nitroglycerin gr. 1/400 was administered every four hours and to each pint of his drinking water sodium bicarbonate dram ii was added.

Oct. 6, 1905. Today the patient is better, his temperature is lower and his edema has lessened. The examination of the urine showed one gram of albumin to the liter. The leukocyte count was 40,000.

Oct. 8. Today the child is not so well. There are signs of consolidation at the apex of the left lung and in the upper part of the left axilla. There is an increase in the area of cardiac dulness both to the left and right. A systolic murmur accompanying the first sound can be heard at the apex and the second sound in the aortic area is much accentuated. The leukocytes numbered 53,800. The examination of the urine showed the same condition as on admission.

Oct. 9. During the past 24 hours the child has been very ill, the temperature last night rising to 104.6°, the pulse 140 and respirations 60. The area of consolidation has increased in extent. The examination of the urine still shows a large quantity of albumin, a few red blood corpuscles and some hyaline and granular casts. The leukocyte count was 42,800; a blood culture was taken today but afterwards proved to be negative.

Oct. 10. Today the temperature dropped to normal, the crisis in the pneumonia occurring last night. The impetigo is clearing up rapidly.

From this time on the child rapidly improved in health, the skin lesions all healed and the nephritis became much better so that at the time of discharge, November 15, 1905, there was only a faint trace of albumin in the urine and an occasional hyaline and granular cast.

The temperature during the first week of the illness was as follows:

	Maximum	Minimum
Oct. 4	104.5	103
Oct. 5	104.4	101
Oct. 6	103	100
Oct. 7	100	98.4
Oct. 8	104.6	102
Oct. 9	103.8	101.6
Oct. 10	99.6	98.6
Oct. 11	98.6	98

Case 2. J. M., a female child 14 months old, was admitted to Lakeside Hospital, October 9, 1909, suffering from diarrhea and a sore mouth. She had some patches of impetigo on her chin and at the corners of her mouth; and these had extended so as to involve the mucous membrane of the lower lip and also the under side of the tongue. Her urine showed a heavy precipitate of albumin, a few leukocytes, some hyaline and epithelial casts. This condition of the urine persisted for about three weeks until the impetigo was cured and then the albumin and casts quickly disappeared so that at the time of discharge from the hospital the urine was normal. The temperature during the first three weeks varied from 100° to 103°. The leukocyte count on admission was 19,000; two weeks later it was 23,000. Cultures were taken from the lesions on the chin and also from those within the mouth and both showed *Staphylococcus albus* and a streptococcus.

In the two cases above described there can be little doubt that the nephritis was a complication of the impetigo. In the first case, in which the nephritis was of severe grade, the kidney condition was present before there were any signs of pneumonia so that it could not be attributed to the latter.

Guiard states that there are two clinical types of nephritis in impetigo: (1) A nephritis, which is transitory in character, without edema, cardiac, or uremic symptoms. The albumin in the urine varies from one-half to one gram to the liter and microscopically a few hyaline, granular, and epithelial casts are to be found. Sometimes a few red corpuscles are noticed on microscopical examination, and rarely there may be sufficient blood to give the urine a red color. The albumin appears at the same time as the cutaneous lesions or a few days later and disappears with the healing of the latter. (2) A nephritis which is more severe and is characterized by general anasarca, cardiac or uremic symptoms. The symptoms are the same as in a nephritis of severe grade from any other cause. The first case here reported was of this character.

Various theories have been advanced as to the causation of nephritis in impetigo. There seems to be no relation to the drugs employed in treatment. In nearly every case reported with the disappearance of the impetigo there has been either an improvement or a disappearance of the kidney disease. The most probable explanation is that the nephritis is either infectious in character or is due to the toxins absorbed from the lesions of the skin. It is more common in those cases in which the mucous membrane of the mouth or nose is affected as absorption takes place more readily from these surfaces than from the skin itself. In both of my cases the mucous membranes were affected.

Salvioli examined the kidneys in a child who died three weeks after an attack of acute nephritis due to impetigo. The volume of the kidneys was increased, the surface was smooth, the capsule stripped off with some difficulty. The cortical portion was quite congested. Microscopically the glomeruli showed evidences of degeneration, the epithelium of Bowman's capsules being swollen and often desquamated. The interstitial tissue was infiltrated with round cells, and the secreting cells of the tubules were swollen, cloudy or granular, often vacuolated, while the nuclei stained badly or not at all.

The occurrence of nephritis in impetigo is probably not very rare, the mild cases being overlooked as the urine is seldom examined in these patients. Guiard was able to collect 29 cases from the literature including two cases of his own. Recently Duvernuy[3] reported three cases in one of which there was general anasarca, convulsions and right sided hemiplegia. It is important that the kidney lesion should be recognized early so that the proper treatment can be given. If this is done nearly all the cases will recover. It should be the duty of every physician to examine the urine of all cases of impetigo, which come under his observation, and in dealing with nephritis of uncertain origin, the possibility of impetigo as an etiological factor should always be remembered.

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10509 Euclid Ave.

A Study of Some Clinical Manifestations Among the Insane.

By JOHN D. O'BRIEN, M. D., Pathologist and Assistant Physician, and
ORAL D. TATJE, M. D., Assistant Pathologist and
Assistant Physician. From the Pathological
Laboratory of the Massillon State
Hospital, Massillon, O.

It is a fact in psychiatry which has by no means been sufficiently recognized that attacks of mental diseases have early symptoms that are often not mental in character. Such prodromata of so serious an event as an attack of insanity are exceedingly well worthy of careful study, for many reasons, most notably because the recognition of their true character and their explanation might enable us in many cases to anticipate and possibly to ward off a mental attack. The physician who is called in to see a patient, suffering from an unusual form of headache, with anorexia, digestive disturbances, anemia, insomnia and obscure sensations, often misses the real point of the case, because he does not realize that such symptoms are, in this particular patient, higher cortical in origin and may mean an attack of acute mania in a week, if nothing can be done to arrest their course.

The psychiatrist often considers a mental attack as being sudden in origin, and puts it down as an unled-up-to mental explosion, when in reality there had been sensory and motor symptoms, sleeplessness and other indications which would have pointed to the existence of previous autointoxication, nerve exhaustion or other disturbances.

The more modern and advanced opinion of the present day, not of necessity the most correct, regards toxic action as the most important factor in the pathogenesis of insanity. According to this view insanity is not regarded as a primary disease of the brain, but secondary, and due to toxins of some nature derived

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from elsewhere, acting upon the cortical nerve cells, disordering their metabolism, and affecting their functional activity, damaging or destroying them.

The older psychiatrists are evidently disinclined to accept the toxic theories of the younger school and cling to the idea that mental disease as a rule is primary and that physical manifestations result from a disordered central nervous system. Certain bodily disorders are, however, regarded by both parties as certainly present in many cases of mental disorder, the point in dispute being—are they cause or effect?

By the term autointoxication, we indicate toxins evoked within the body as a result of disordered metabolism, first, such as take place in Bright's disease, etc., and secondly, the contents of the gastro-intestinal tract.

Some few of the symptoms that we consider as evidence of a state of toxemia are as follows: foul breath, coated tongue, indifference to and complete refusal of food, marked constipation alternating with diarrhea, foul stools, constant headache, anemia of varying degree, a sallow skin, profuse perspiration of an offensive odor, skin irritation, eruption disorders of sensation and flesh picking.

It may be suggested that the signs and symptoms mentioned as those of toxemia, are but those of lowered health, and do not in themselves afford any evidence of the absorption of toxins. A glance at the statistics appended will give one an idea of the relationship of mental disorder and physical disturbances. At the time of admission to our hospital every patient is placed at complete rest, until at the discretion of the attending physician he is able to get up and walk about. An effort is made to make as systematic an examination of every case as is possible, the urine of every case is sent to the laboratory for examination, likewise in most instances an examination of the blood is made, the gastric contents are examined quite frequently, and if necessary the cerebrospinal fluid. Such examinations are repeated at various intervals and upon request of the physician in attendance.

The urine: The urinary examination in 1050 cases shows that of this group 187 presented albumin, the amount of which varied from ¼ to 5%. Ten of the 187 showing albumin were cases of delirium tremens, the albumin varying from ½ to 3%. Three of these cases had convulsions, one dying during the convulsions. From our observations of these cases we believe the convulsions to be uremic in nature; albuminuria occurred in delirium tremens in 85% of the cases; it is purely toxic, and disappears with the delirium; when it persists it is probably due to nephritis. We have also found a direct relation existing between albuminuria and pus conditions of the teeth, the albumin disappearing immediately following the withdrawal of the tooth and drainage of the pus sacks. Quite a few of the above cases had acute mania which was undoubtedly due to nephritis. Further corroboration of this was seen in the recovery of the patient following the disappearance of albuminuria.

Twenty cases presented sugar, only six of these patients had true diabetes mellitus. Of this number three died of diabetic gangrene, while one died in diabetic coma.

Excessive phosphaturia was noted in 177 cases. Phosphaturia was noted to be very common in depression.

Fifty cases had pus in the urine, depending upon an existing nephritis, while 13 cases presented pus directly traceable to pyelonephrosis. In 3% of the cases the condition was tuberculous as shown at autopsy. Pus conditions of the bladder usually disappear after bladder lavage, and the administration of urinary antiseptics.

Ninety cases showed excessive indicanuria. Our conclusions relative to indicanuria coincide with those of other workers, that there is a relation in some cases between indicanuria and depression, that in certain depressed cases indican is excreted in excess, the more intense the depression the greater the excretion of indican. In states of mental elation there is seldom any increase, the amount excreted being normal or absent. Mental recovery is often preceded by the disappearance of indican from the urine.

With reference to the color of the urine, a wide variation was noted from clear amber to black or bloody urine. In 50 cases the urine was whitish, in 53 chocolate color was observed, in 15 blood was passed. We found no particular change in the character of the reaction. The amount of urine passed in 24 hours is oftentimes difficult to ascertain, it being necessary to employ very careful observation. About 1000 c. c. seemed to be an average. As much as 5500 c. c. was passed, while as low as 100 c. c. was observed in another case. In cases in which there is a resistive tendency on the part of the patient, it is very difficult to ascertain correctly the amount voided. The sp. gr. varied from 1005 to 1040, an average of 1020. A brief résumé of the above figures will show us that there exists a certain relation between urinary conditions and certain types of mental disorders. Further confirmation of this association is noted when, after glancing over our autopsy records, we note that 85% of the cases at autopsy showed a pathological change in the kidneys from acute parenchymatous nephritis—pyelonephrosis, to cases with large renal calculi. Certainly the cause for such conditions affords us an opportunity for research work in determining the causative agent.

The blood: As a result of an investigation of the blood of 350 cases of insanity, we have found there is a marked deterioration both as to formed elements and important constituents. As a rule, which had scarcely any exceptions, the corpuscles were much below the normal in number, the percent of hemoglobin reached an average of 70%, while in some it was as low as 30% and in three or four even 20%.

The erythrocytes numbered on an average 3,000,000. Counts were as low as 1,600,000, while one count as high as 7,000,000 was recorded. The leukocytes showed wide variance on individual counts extending from 6,000 to 10,000. In paresis the leukocyte count ranged from 10,000 to 35,000; during an excited period of paresis, the leukocytosis was observed to run about 25,000. This leukocytosis accompanied by the great rise in temperature, which is usually associated, would lend further support to the bacterial origin of this disease. One case of lymphatic leukemia afforded an interesting study for a few weeks, the leukocyte count ranging between 430,000 to 485,000.

With respect to the differential count of leukocytes, this subject is so large that we can allude only briefly to it in passing. The cell which fluctuates mostly in connection with the acute disturbances is the polymorphonuclear leukocyte. Lewis Bruce has conducted some very close and interesting observations on the leukocyte during the course of the acute insanities, and he seems to think it is of value as a prognostic agent. Already, as a result of his observations, it may be stated that a high polymorphonuclear leukocytosis is a good omen in the acute insanities. Moreover the artificial production of a high leukocytosis by the injection of certain substances might aid in the recovery of some obstinate cases. This condition of high polymorphonuclear leukocytosis might also give us a reason why in certain mental disorders, which cases are apparently demented and hopeless, when upon or following an attack of erysipelas or some other acute infectious disease, complete recovery from the mental disorder takes place. By a study of such accidental cures we can see dimly into nature's methods and get a hint of means we might profitably adopt.

Dr Clouston, in his Clinical Lectures says: "I think some day we shall be able to inoculate a septic poison and get a manageable counterirritant and fever, and so get the alterative effect of such things, and the reaction and stimulus to nutrition that follows febrile attacks." This condition of blood impoverishment means that the oxygen carrying capacity of our great circulating medium is greatly reduced, that all vital functions including that of the brain and nervous system generally are impeded and lowered, that repair is inefficient and metabolism incomplete with the retention of deleterious products in the system.

The blood impoverishment varied in different individuals within wide limits and in different forms of mental disorders. It was, on the whole, more marked in depressed states. Usually upon the administration of hydrotherapeutic measures and some suitable medicinal agent, recovery takes place, being preceded by the improvement in the blood condition.

The gastro-intestinal tract: In a large percent of the cases admitted, nutrition is seriously impaired. Gastric conditions are quite common. In a great many instances hypochlorhydria exists. In but few cases is hyperchlorhydria seen. Mucus in large amounts is found quite frequently. We find in a large number of cases of depression an almost complete absence of the constituents of the gastric juice. As the stimulus to gastric secretion is primarily emotional, it is not surprising that this function should be so considerably influenced by the mental condition of the individual, nor that the belief in poisoning or obstruction to the entrance of food into the stomach should so commonly be associated with the uncomfortable gastric sensations, a foully coated tongue, sordes, chronic nasopharyngeal inflammation and bad teeth. Further proof of the relation between the mental and physical condition was found in the effect of gastric lavage and the necessary medication in dissipating the ideas of poisoning and also relieving the intensity of the depression.

R. C. Kemps examining a large number of the insane at Wards Island, N. Y., found acute and chronic dilatation of the stomach in a large percent of the cases. His examinations were made with a gastrodiaphane.

There is a form of gastro-enteritis hitherto undescribed to which I desire to call your attention. It is acute in type and oftentimes exceedingly fatal. The autopsy findings are quite alike in each case. It betrays every evidence of a bacteremia, although we have never made any examination of the blood for bacteria. It is more commonly associated with cases of the involution melancholia type. Mentally we find great restlessness, fear, agitation and constant moaning, the patients having ideas that they are burning up. There is associated great anemia, foul mouth, tongue heavily coated and reddish in spots, stomatitis and chronic nasopharyngeal inflammation which extends throughout the entire gastro-intestinal canal. There is utter disgust for food, a feeling that the stomach is filled up, that no food can enter, diarrhea of a thin whitish fluid and rapid emaciation. Lavage reveals thick mucus, total absence of acid with occasionally brownish clots of blood. Oftentimes at the height of the disease parotitis develops. The temperature quite frequently is subnormal, with a high temperature shortly before death. There are sudden, painful, reddish, enlargements of various joints which usually disappear within a few hours. Death is usually sudden and when least expected.

The parotitis rarely goes on to suppuration. This condition appears to me to be directly traceable to oral sepsis, the infection traveling along the salivary duct. I think all of these cases of secondary parotitis are due to the same cause in spite of any routine of antiseptic mouth washes. The fact that this condition frequently occurs in cases of gastric ulcer with hematemesis, or during treatment by oral starvation, I regard as coincident. At autopsy there is intense engorgement of the vessels of the stomach and small intestine. In some cases ulceration is seen in patches, mild peritonitis, pericarditis and patches of various sizes of inflammation in the endocardium extending and involving the aorta extensively, giving it an appearance as though it had recently been daubed with red paint. In two cases there was sudden diffuse hemorrhagic pleural effusion. In one case there was hemorrhagic effusion into the peritoneal and pericardial cavities. The diffuse involvement of so many of the abdominal viscera and its predilection for serous membranes leaves only one theory open for discussion—that such a condition is undoubtedly a bacteremia, originating probably in the gastro-intestinal tract. The previous history of such cases is that for some months previously they have been troubled with some form of intestinal disorder, the common complaint being that they have stomach trouble.

The relief afforded in some cases by gastric lavage, followed by the introduction of certain antiseptics and saline enemas, leads us to regard the gastro-intestinal tract as the origin of the causative agent.

Assuming that the insane prior to their attack of mental disease suffer from either some hereditary weakness or some acquired constitutional degeneration, it is most probable that such defects act a dual part, weakening not only the nervous system so that it is more susceptible to the action of toxins, but also weakening the natural defenses of the body. The nervous system of these people is laid open to more severe and frequent attacks from poisonous substances, whether of bacterial, metabolic or other sources, than is the nervous system of a more normally organized individual.

L. C. Bruce has pointed out that over 60% of maniacal patients were deficient in the normal protective agglutinin to certain strains of streptococci.

C. J. Shaw has ably demonstrated that the reason tuberculosis accounts for such a large percent of the deaths among the insane, is not wholly due to any faulty hygienic precautions, but due to the fact that the resistive power of the individual to the tubercle bacillus is below par. Assuming that this hypothesis is true, we can more readily understand why the various insanities so frequently resist our efforts to cure them.

Besides the hereditary or acquired weakness of the nervous system and general defense, some secondary influence or combination of such is usually necessary to tilt the mental balance of these people toward insanity.

Biliary Lithiasis and Inanition.

By MORRIS SCHOTT, M. D., Cleveland.

Many are the contributions of writers on the subject of alimentation in biliary lithiasis, but if we search for the question of hygienic alimentation of this affection, we find that while qualitatively the question of the best kinds of food is usually well and abundantly dealt with, the question of the amount of nutrition is often left severely alone. It goes without saying that many attempts have been made to indicate the action of special foods and food-products, but we may look in vain for precise information as to the limitations of the physiological amount of food which should be given in hepatic-biliary lithiasis. We find no indication whatever as to the length of time or duration of a certain alimentary regime nor of quantitative variations of food allowance during the recession of the symptoms. However, this neglect may lead to distressing consequences since the limitation of regime can, by prolonged application, result in a veritable inanition with all its disastrous sequelae.

It is important to remember that while it is necessary in the acute stage of hepatic lithiasis to exercise a rigorous alimentary restriction it is on the other hand useless and often harmful to extend the time of the systematic reduction of food.

Leube and others have insisted on the importance of giving a sufficient quantity of food to dyspeptics, and have accentuated the fact that a reduction of alimentary rations can perpetuate other morbid conditions. In my estimation the same conditions obtain with hepatics as with dyspeptics, and for the same reason inanition accentuates the morbid hepatic symptoms by adding other disturbing factors to those which already exist.

Should we permit our patient to return to his normal and usual rations the next day after his hepatic colic? This would certainly be a faulty practise, for at this period the stomach requires rest and the first indication is to empty and possibly to disinfect the intestines. If the hepatic colic is immediately followed by signs of peritoneal involvement about the biliary canals, if there is a rise of temperature with chills, if the region of the gall bladder is the seat of intense pain, it is certain that the only authorized alimentation is milk. This conduct of hepatic colic, however, is not the general rule. We observe in most cases the crisis of paroxysmal pain with its usual train of symptoms—vomiting, abdominal, hepatic, and gastric hyperesthesia, etc.; then the spontaneous pain, vomiting and slight rise in temperature, if it exists, slowly recede and all the other accompanying symptoms disappear. For alimentation we prescribe an exclusive milk diet which we may maintain possibly for seven or eight days. Sometimes the persistency of hepatic sensitiveness and especially the appearance of icterus will justify a still more cautious procedure but from that time on, generally speaking, our difficulty begins and what are we to do?

Often under the influence of our milk diet the hepatic tenderness disappears entirely, but equally numerous are the cases in which the diminution of hepatic tenderness is only limited, leaving the hepatic region which remains hyperesthetic. What are then the indications in our regime? Must we insist on the continuance of the milk diet?

In some cases—yes, in others—no. If all menace of angiocholitis or cholecystitis is not entirely excluded, if there is still some elevation of temperature even with slight oscillations in the evenings, if the pulse is rapid, the indication is to continue a strict milk diet. If on the contrary the temperature has remained normal during eight days, and if the pulse is not increased in frequency, I believe that it should be our aim to return to a normal amount of food even if there is a certain amount of tenderness remaining in the hepatic region.

It is very important to realize that, in returning to a sufficient diet with dyspeptics who suffer from inanition, a new cause of gastric troubles is encountered, evidenced by epigastric tenderness, a full feeling after eating or even the appearance of pain occurring immediately after eating. It is only necessary to keep this phenomenon in mind so that we may not be unduly alarmed. In patients with gall stones who are underfed and who may experience some gastric uneasiness after each repast when the diet is increased, it is the same as with dyspeptics. If an hour after the repast the degree of hepatic tenderness is not materially increased and if there is no accompanying rise in temperature and no variation of subjective symptoms during several consecutive examinations, we certainly are justified in continuing to increase our patient's diet. We should especially note any hyperesthetic condition of the hepatic region as contrasted with the gastric. Gastric and hepatic hyperesthesia are symptoms pointing to distinctly different conditions. The one reveals merely functional trouble of common occurrence, the other is often an indication of a definite organic disturbance. It seems to me that palpation systematically practised after the meal is the best method of control which we possess for estimating whether a more abundant alimentation should be given, or would be tolerated.

Let us see what often happens in these cases. On one side the physician, on the other side the patient, both trying their best to restrain alimentation for a long time after the critical period is past. The physician knowing the effect of milk on the digestive tract is guided by the epigastric and hepatic sensibility and is afraid to resume alimentation so long as there is an appreciable amount of tenderness. The patient fearing the return of a crisis as painful as the last, the cause of which he will often consider to be a bad digestion, will restrain his appetite and refuse to take food, although the seat of his trouble is located elsewhere. We see therefore that the physician and the patient are involved in a vicious circle. The return to normal diet produces an exaggeration of previously existing gastric troubles, which would be an indication to the physician to again impose a strict milk diet if he has no concise knowledge of the history in the case and is not forearmed, and to the patient would be proof positive that milk should be his exclusive diet.

The patient resumes his active life—his daily ration of the two or three liters of milk which are often taken unwillingly, do not in the long run constitute a sufficient amount of nourishment. If the patient remains inactive, owing to an increasing dislike of his diet he will not fail to decrease his alimentation to two or even one liter of milk a day. We do not have to wait very long for the result—the loss of weight is rapid, nervous phenomena, such as excitement, excessive sensibility, etc., appear or are accentuated if they already exist. If we remember that biliary lithiasis is met with great frequency in women suffering with gastric, renal and hepatic ptoses we can readily understand that insufficient diet will only aggravate the pre-existing condition and that, under the influence of loss of body weight, atrophy of the abdominal muscles and relaxation of the suspensory ligaments are induced which accentuate the already existing troubles and hyperesthesiae. Struck with the rapid loss and emaciation of their patient certain physicians prescribe tonics, medicated wines and stimulants, the only therapeutic action of which in most cases is to increase the gastric hyperesthesia and very often to create a veritable drug-gastritis.

Let us now proceed with the examination of our patient who is suffering from gall stones and who is insufficiently nourished. The tongue is coated, the margins showing the imprints of the teeth; the coating is of a creamy consistency, mastication being almost nil, the lingual papillaries do not receive their usual mechanical scrubbing through the friction of usual foods. There is often ptosis and dilatation of the stomach and a marked succussion is present after the ingestion of a small quantity of liquid, as the stomach is incapable of peristaltic contraction. In examining the liver by palpation there are some peculiarities to be noted. Mathieu has demonstrated that the dimensions of the liver become diminished as the result of experimental inanition, the decreased hepatic dulness reaching in the adult from seven to eight cm. and even as low as four cm. in the mammary line. The usual dulness averages between 10 to 12 cm. but if icterus does not make its appearance after a hepatic crisis the hepatic dulness recedes more and more until it measures about eight cm., but in order to attain this end two conditions must be fulfilled; first, that every remnant of the acute symptoms shall have disappeared and, second, that the total amount of alimentation shall be less than the individual requires.

We may therefore adopt the general rule that every hepatic colic is accompanied by an increase in the volume of the liver. The edge of the liver is easily palpated below the costal margin for several weeks after a crisis; but this same hepatic colic when accompanied and complicated by symptoms of inanition will assert itself by an easily appreciated relative diminution of liver volume. I wish to add that the liver in emaciated hepatic cases remains somewhat tender and painful to palpation, while in emaciation without hepatic complication and in cases of ptosis the organ can be grasped between the fingers without eliciting the least sensitiveness.

Let us consider the physiological mechanism of the liver attended with a reduction of alimentation. Without rehearsing the often considerable aggravation of nervous troubles caused by insufficient nutrition and without again referring to this same insufficient nutrition as being a factor in the ptosis so often associated with lithiasis, let us content ourselves for the present with considering the influence excited by inanition on biliary secretion. Experiments, more than clinical observations, have shown that two factors enter into the production of biliary lithiasis, one being the stagnation of the bile and the other infection, naturally the latter often being the primary cause of the first or at least greatly favoring it. What occurs then following the crisis of an hepatic colic? One or more calculi once mobilized are rarely completely evacuated. To the mechanical cause of stagnation of bile in the liver and extrahepatic canals is added a decrease in the discharge of bile into the intestines, a decrease which is in functional relationship with alimentary reduction. We know from the physiological point of view that the excitation of the duodenal mucous membrane under the influence of the passage of chyme represents an essential factor in regulating biliary excretion by bringing about contraction of the hepatic canals. An insufficient alimentation as it is usually prescribed can only reduce this excitation of the duodenal mucous membrane and in its turn reduce the biliary excretion to its minimum. Under these conditions the bile has a tendency to stagnate in the extrahepatic canals which already contain calculi or bile sand and this stagnation is not without influence, as we have seen, in secondarily acting on the biliary-secretory function and on the liver cells which are in their turn overpowered by the general congested condition. As the flow of bile is interfered with and retarded, the bile itself loses its fluidity, becomes of greater consistency and of a more intense color. The new conditions are, as we know, eminently favorable for the development of aerobic and anaerobic germs which bile seems to contain even in normal conditions, and which provoke and exaggerate the infection of the walls of the ducts, the mucous membrane becoming congested and reducing still more the caliber of the excretory ducts.

Are these not sufficient causes to increase the painful spasms and to favor a new crisis of hepatic colic? But still further, alimentary reduction not only acts on biliary excretion but influences also the secretion itself. It is established without question that fasting reduces the production of bile. The biliary flow no doubt never entirely ceases; in contradistinction to the pancreatic secretion which is intermittent in character, the hepatic secretion slackens under the influence of reduction of alimentation and this retardation is in proportion to the scantiness of the flow of bile.

Relatively recent investigations have penetrated more deeply into the relations which unite the biliary secretion with the function of the gastro-intestinal canal. Pawlow has demonstrated that the contact of acid chyme with the duodenal mucous membrane is the essential factor which regulates pancreatic secretion. Other investigators have also shown that this secretion-excitation should also be laid at the door of a substance contained in the upper part of the intestinal tract which has been designated "secretin" and subsequent experiments have demonstrated that the stimulating action of secretin exerts its action also on biliary secretion, intestinal secretion and intestinal motility. We can, then, understand how under these conditions an insufficient alimentation may reduce and relatively check biliary secretion by diminishing the physiological function of the duodenum caused by the contact of acid chyme with the mucous membrane of the first and upper part of the small intestine. Then *a priori* is it not an advantage in case of hepatic lithiasis to try to excite bilary secretion by the normal physiological mechanism, that is by alimentation as well as by a number of the physiological medicaments which we are in the habit of employing?

In addition we may conclude that the bile and biliary salts in themselves bring about a stimulation of the secretion of bile; we encourage still more the progressive reduction of biliary function by opposing the normal mechanism of hepatic secretion and excretion by a prolonged and exaggerated alimentary reduction.

Clinically, one of the bad effects of inanition is represented by constipation which is kept up or aggravated by many conditions. Foremost is the reduction of alimentary products proportional to the amount of ingested food, following this is the reduction in amount, or lessening of the activity of secretin, which in the normal state stimulates intestinal contraction and motility. In many cases this constipation is accompanied by mucomembranous colitis which is not surprising if we remember that hypersecretion of mucus is influenced by, and dependent upon nervous excitation of central or peripheral origin and that nervous phenomena are still more exaggerated by inanition.

If we are guided by these considerations I do not think that there is any clinical or physiological reason against advising our patients with hepatic colic to increase and vary their diet of milk beginning from the seventh to the tenth day after the onset of the hepatic crisis, if no indication of infection or peritoneal involvement exists. We should take this view still more under consideration since a lithiasic patient, in whom the crisis has already lasted for some time, is subjected to an insufficient alimentation from the beginning of his hepatic troubles, and presents the usual symptomatic train of symptoms, dependent on inanition.

In this regard it is of first importance to be informed, in as precise a manner as possible concerning the body weight of the patient before the appearance of the crisis which has primarily been the occasion of the inanition, for, in the majority of such cases, increase in weight is an early sign of improvement. It is sometimes surprising to see with what rapidity this increase of body weight takes place under a proper arrangement of nourishment. On the other hand under the influence of realimentation the previous gastric trouble will not fail to ameliorate. I have already stated that the first trials of realimentation may surprise or irritate the sensitive gastric mucous membrane and increase the hyperesthesia in an underfed patient, but I cannot repeat too often that in spite of these sensations we must insist on the progressive increase of alimentary ration at the commencement of realimentation. This procedure will soon attenuate the painful gastric sensibility and we will find that a diminution in the degree of splashing and a retrogression of the attendant gastric dilatation will not fail to be one of the cardinal signs of improvement.

On the contrary a change of volume of the liver is hardly noticed. This is one of the characteristics which should aid us in differentiating between inanition in the case of simple dyspepsia and inanition complicating biliary lithiasis. There is nothing surprising in this, for in biliary lithiasis with inanition the area of hepatic dulness ranges between 10 and 12 cm. for about two months following an hepatic crisis, sometimes it may fall as low as eight cm. if alimentation continues to be insufficient. No doubt under the influence of realimentaton the liver would have a tendency to increase in volume just as it diminishes when the alimentary ration is lessened, but on the other hand we must not lose sight of the fact that with such patients suffering from acute biliary lithiasis the volume of the liver is already increased in consequence of the crisis, and that it diminishes in volume in proportion to the length of time that has passed since the crisis, especially as the phenomena dependent on hepatic congestion and retention of bile recede. When on one hand the liver increases in weight in consequence of realimentation in cases of underfed patients with gall stones, on the other hand it loses again through the lessened retention of bile. I believe this to be the explanation of the fact that hepatic dulness varies within such narrow limits, even after such patients have gained in weight. Whatever might be the modification of the volume of the liver under the influence of realimentation its sensibility to pain gradually diminishes, occasionally persisting for one or two weeks after the entire disappearance of gastric hyperesthesia. At the same time the general physical condition improves, the nervous phenomena mend, the tongue becomes clean, moist, and red, and in this manner we sometimes assist in a veritable resurrection of the patient's forces.

It might be proper to add that in cases of lithiasis complicated with inanition we ought not have recourse to a regime of unrestricted diet or even to the normal amount of food. It is, on the contrary, of primary importance to act with caution from the time when we wish to substitute the milk diet with a larger and more varied diet. It then becomes necessary to increase the diet little by little, maintaining each stage of increase for a certain period. The usual every day amount of food should be taken only after all gastric and hepatic hyperesthesiae have disappeared. Usually with lithiasics who are poorly nourished we should commence by adding to the daily milk diet 100 to 150 gm. of farinaceous food in the form of gruel, then successively purees, vegetable soups and lastly eggs. Concerning the latter we know, contrary to the old theory which rejected eggs entirely from the diet list in lithiasis, that it is now perfectly legitimate to employ them, since experimentation has proved that the cholesterin introduced thus into the organism has no influence whatever on the normal cholesterin content of the bile. In the opinion of the author we should prolong the carbohydrate regime taking care to increase the quantity of food in proportion to the disappearance of hepatic and gastric sensibility. Finally, from the physiologic point of view nitrogenous food stimulates the biliary secretion more than carbohydrates, and for this reason a meat diet should not be authorized until late in convalescence and after the disappearance of untoward symptoms.

We should recommend our patients to take their nutrition in small doses repeated frequently, that is about every two hours. By this means the work of the stomach is diminished, necessitating a lesser effort in the evacuation of food by the muscular wall of the stomach already weakened by inanition: also the more frequent passage of chyme into the duodenum influences at the same time the secretion and excretion of bile and increases the continued biliary debit in the normal state and diminishes the spasm of the hepatic canals. These conditions also assure the depletion and passive relaxation of the gall bladder.

2369 East 55th Street.

A Clinical Report on a Technic for Closing the Urinary Bladder after Suprapubic Opening

By WILLIAM E. LOWER, M. D., Lecturer on Genito-urinary Surgery, Western Reserve Medical College.

Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, June 3, 1910.

Drainage after suprapubic opening of the bladder is, I believe, needlessly practised in too many cases. Reasons generally given for drainage are, first, a diminished risk of infection and, second, the difficulty of suturing the wound so it will not leak and still be a safe procedure. The first has been over-emphasized and the second overcome.

If the purpose of leaving the bladder open is simply to drain that viscus, then a perineal opening will answer the purpose better and be much more comfortable for the patient. If it is left open because attempts at closure are generally failures, that also is a mistaken idea, for with the technic I desire to show you the bladder can be tightly closed with no risk and seldom any leakage. Everyone who has followed the aftertreatment of suprapubic wounds, knows what a "messy," uncomfortable wound it makes after the tube comes out for the final closure by granulation. The convalescence is much prolonged, a fistula often remains for months and the bladder becomes almost invariably infected if it has not been so before. On the contrary, by immediate closure the patient voids naturally from the start and is generally up and about in a week or ten days and can leave the hospital in from ten days to two weeks. With such a possibility the suprapubic operation should be selected oftener than it is. It also affords a means of operation on the interior of the bladder by direct inspection. This can be done in no other way except by the operating cystoscope which can be used only in a certain small percentage of cases. The cases in which the suprapubic route is especially indicated are tumors and foreign bodies in the bladder and diverticuli of the bladder. The exceptional case in which drainage should probably be used would be severe hemorrhage with large clots in the bladder but even then it is not absolutely necessary: when these are emptied the bladder can be closed and a perineal drain substituted.

I have opened the bladder suprapubically 69 times for various causes, and have made an immediate closure in 35 and have

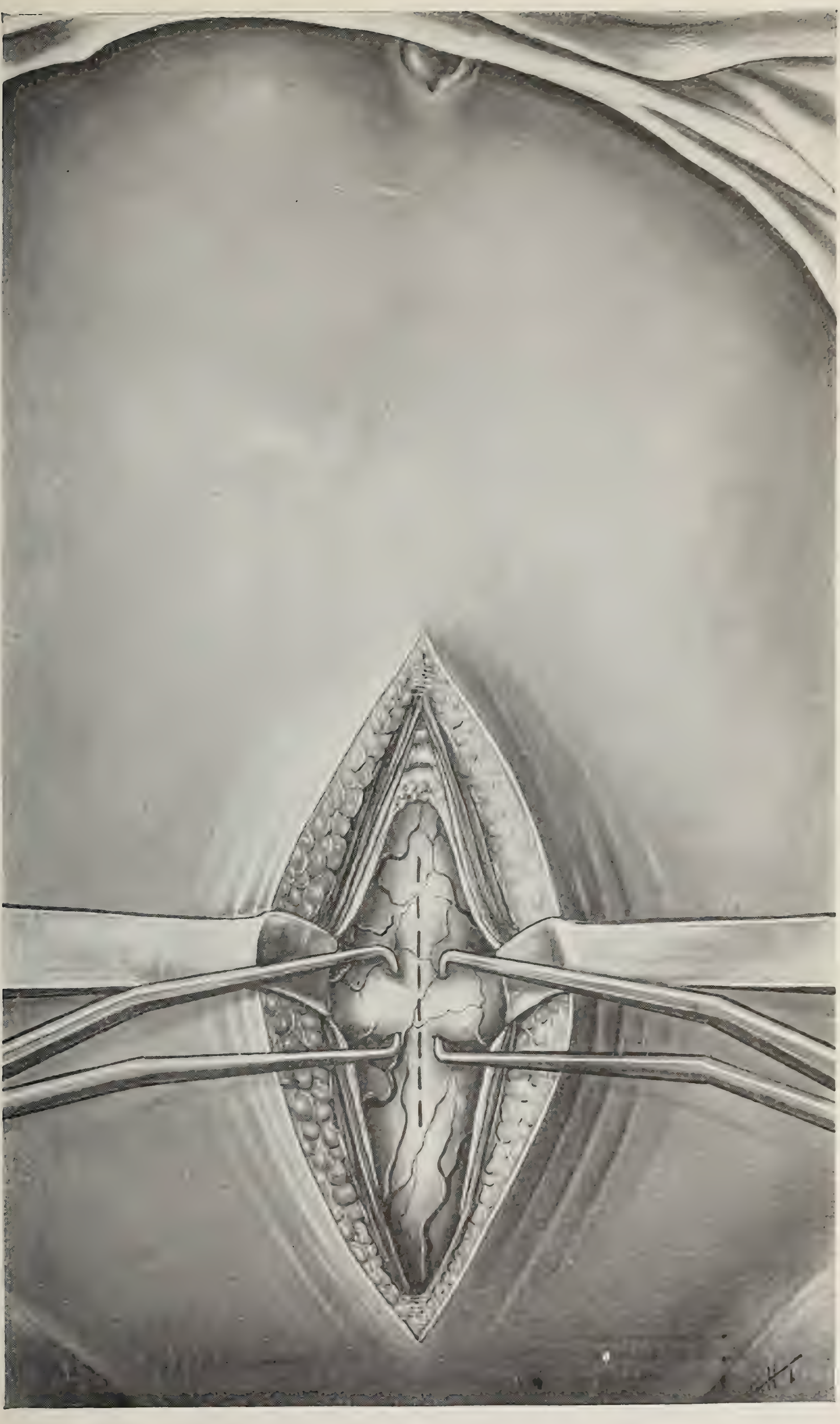


Fig. 1

employed drainage in 34. I am unable just now to give the exact time of convalescence in each case but approximately the drainage cases have required from three to four weeks longer than the immediate closure cases, and have generally had an annoying period of convalescence with dirty bladders which required irrigation afterward. The closure cases have averaged from two to three weeks for convalescence and have generally been up and about in from ten days to two weeks. The bladders were irrigated through the urethra from the start and by the time the patients were ready to leave the hospital, the infection (when present) had progressed well toward recovery.

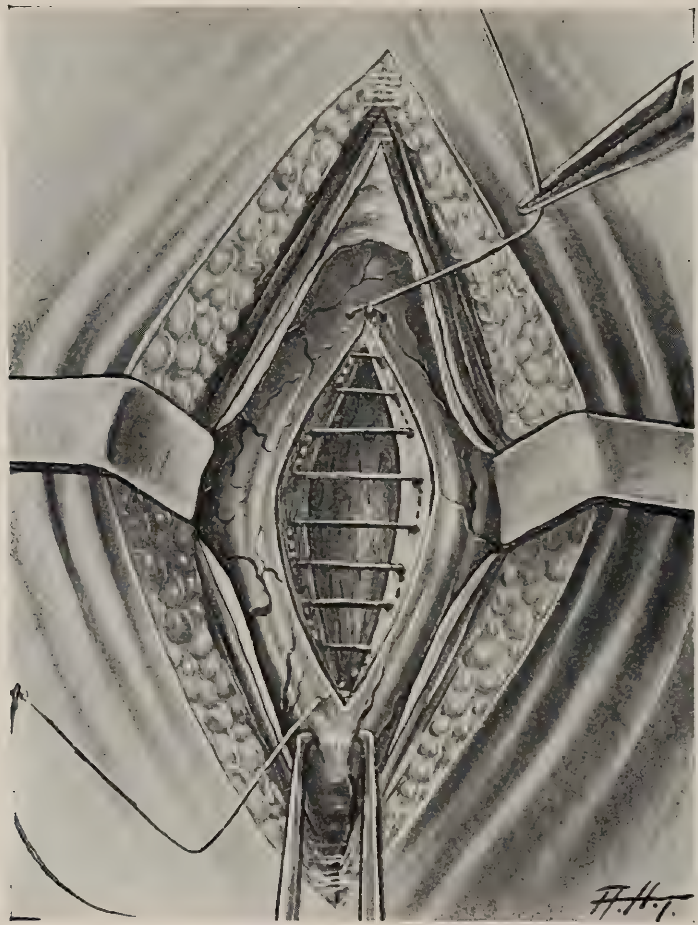


Fig. 2

The technic employed is as follows: The bladder is thoroughly washed with a boracic solution and then filled with the same before the patient is anesthetized. Nothing is inserted into the rectum as is often done. The patient is placed in the Trendelenburg position, a vertical or transverse incision is made, depending upon whether or not there is much adipose tissue. After cutting through the sheath of the rectus and separating the muscle, the peritoneum is pushed out of the field and the bladder exposed extraperitoneally. A curved two pronged tenaculum or bullet forceps catches the bladder on each side (as shown in Fig. 1), the bladder is lifted and an incision made longitudinally between the two tenacula into the bladder. The tenacula are now removed and the edges of the bladder incision retracted with small smooth retractors (if greater retraction is needed) but at no time, and this is most important, are the cut edges caught by a crushing forceps, e. g. like a hemostat. If this is done, it will be impossible to get a close approximation of the cut edges. When the wound is ready for closure, a round, half curved needle threaded with 00 chromic catgut is used, never linen or silk. Stones almost invariably form if the ligature is non-absorbable.

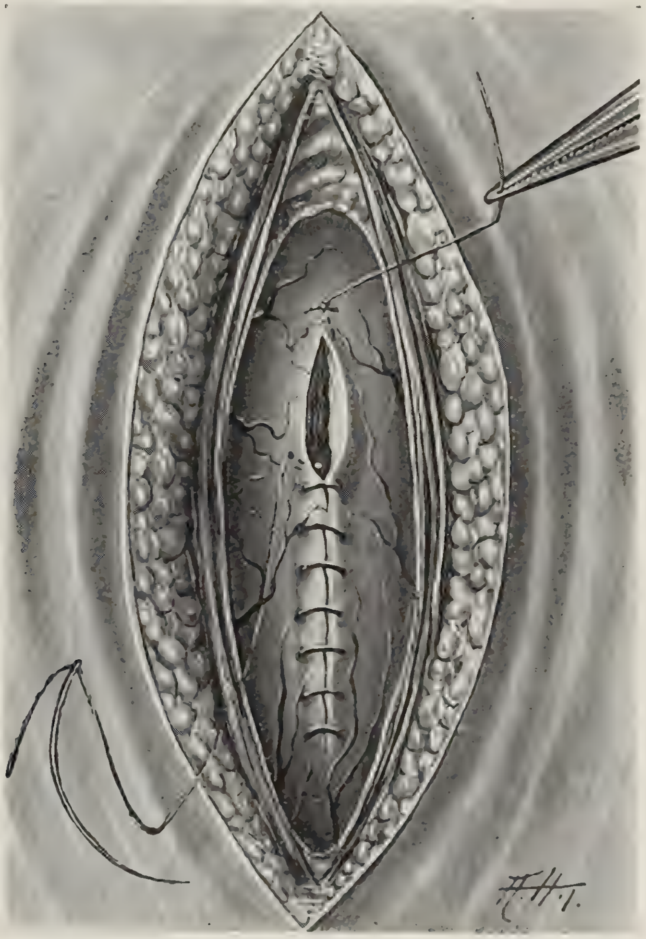


Fig. 3

The first suture is passed through the muscular coat down to the mucosa (Fig. 2) and a free end is left long for traction; a tenaculum is inserted at the other end of the opening and the cut stretched. The first row of sutures is then made parallel with the cut muscles, never through the mucosa, and is drawn only tightly enough to approximate nicely the cut edges.

The next row of sutures (Fig. 3) is made transversely to the cut and penetrates all the layers of the bladder except the mucosa and is then tied to the free end of the first layer. By keeping the bladder on the stretch and placing the transverse sutures closely together when the bladder contracts it makes the wound still more firm, but if sutured when the bladder is contracted, then when the bladder becomes distended the sutures will be stretched apart and there will be great danger of leakage.

I am now using this method in all suprapubic openings except in suprapubic prostatectomies. I have had no deaths and no threatening complications, and in only a few cases has there been any leakage. When it has occurred it has been of short duration. I believe that by some such technic as I have here shown, the suprapubic route is much better and safer as to complications for the removal of calculi than the lithotrite. The urethra is uninjured, the operation can be done quickly and cleanly and the patient made much more comfortable.

222 Osborn Bldg.

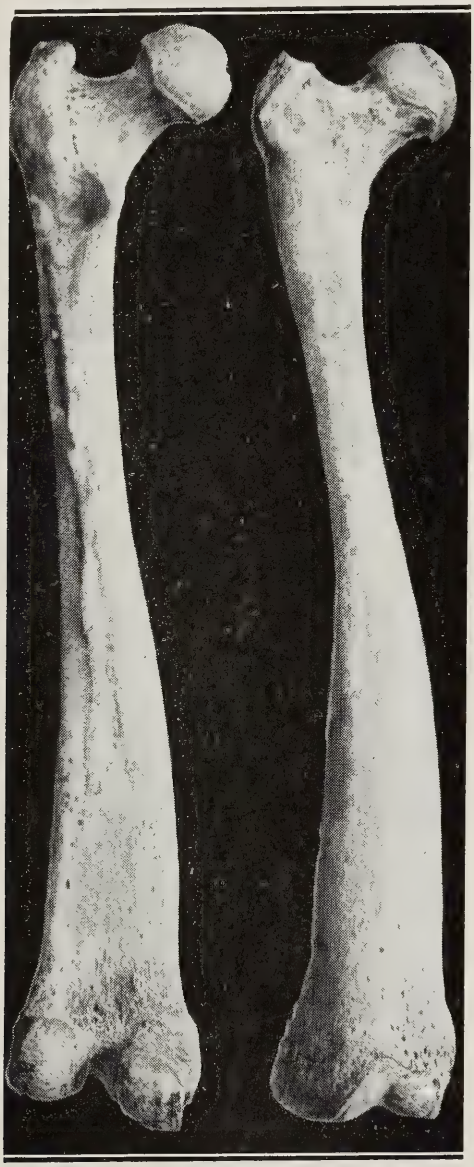
An Abnormality in the Form of the Femur.

By C. A. HAMANN, M. D., Cleveland.

Two femora in my possession present a variation in the configuration of the lower half of each bone that is certainly unusual and to my knowledge has not been described. The bones were taken from a tall, thin, male adult who had apparently died of tuberculosis. There are no abnormalities in the other bones, with the exception that the upper thirds of both tibiae are rather thicker in the transverse diameter and the curves in the bone are somewhat greater than is normal.

The femora are perfectly symmetrical; the surface of the bones is smooth and there is no evidence of periosteal or osteal inflammation; the articular extremities show no evidence of disease. At about the middle of the shaft, each femur begins gradually to flatten anteroposteriorly and the transverse diameter increases till the condyles are reached, thus differing markedly from the more rounded form of the normal femur. A transverse section of the bone would therefore present a transversely oval form.

These bones do not correspond in shape or appearance to any of the pathologic modifications of the femur that have been described, indeed as stated above there is no evidence of any inflammatory or hyperplastic process. The density of the bone seems normal, no section has been made to show the interior however.



RIGHT FEMUR.

The accompanying illustration, which gives an anterior and posterior view of the right femur, will give a good idea of the appearance of the bones.

The specimens, I believe, are to be regarded as a variation in the normal form of the femur, in other words as anomalies; whether or not any morphologic significance is to be attributed to them, I do not know. The marked symmetry is an interesting feature.

Manouvrier (La Platymerie, Paris, 1889) describes femora that are flattened anteroposteriorly in the upper third of the diaphysis; he names the condition "platymerism," regarding it as analogous to the well known platycnemism of the tibia. His specimens were found in old French burial places and he states that platymerism is very rare in modern races.

416 Osborn Bldg.

The Treatment of Varicose Ulcer of the Leg.

By M. COPLAN, M. D., Cleveland.

It would seem that very little new could be said concerning the treatment of a disease so long recognized and so frequently encountered as varicose ulcer of the leg. But considering the various methods advocated in our textbooks, from the Scott-Schley method to the exposure of ulcers to the rays of the sun and to the x-rays, I thought of presenting a method I have used very successfully in a number of cases. The non-surgical treatment of the disease will alone be discussed.

In reviewing the etiology of varicose ulcers, first of all, there must be varicose veins, and these are caused by an abnormal amount of blood in the veins due to some impediment to its return flow. Occupations which require prolonged standing, heart and lung disease, tumors of the pelvic or abdominal cavity may all be determining factors in the disease. It is evident that any obstruction to the return venous circulation has a tendency to develop varicose veins; thus, tumors of any variety which press upon the iliac veins will give rise to them. It has been stated that the left leg is more frequently affected than the right on account of the sigmoid flexure, which, when distended, presses upon the iliac veins. The cecum, however, would press nearly as much on the right iliac veins and, as a clinical fact, the right leg is affected with equal frequency. As the current in the veins is dependent upon a free and sufficient circulation through the heart, the arteries, the capillaries, and the veins themselves, whatever interferes with the passage of blood through any of these will

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Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, January 7, 1910.

predispose to varicosity. Hence feeble action of the heart, obstruction in the arteries, the involvement of any of the capillaries in any inflamed or thickened mass of indurated connective tissue will check the free passage of blood and so withhold the *vis a tergo* necessary for driving the blood along the vein. In consequence, the blood current in the vein will be retarded and the increased pressure on the vessel wall will cause dilatation.

In employment that necessitates much standing and especially when, in addition, there is a leaning forward, which throws most of the work on the muscles of the calf, the continued use of these muscles will cause a determination of blood to them, and by and by the overfilling of the vein will exhaust the resisting powers of its wall and allow its dilatation.

As regards the anatomic characteristics we find that the simple dilatation of a vein from any cause stated above, may assume various secondary forms. A circumscribed portion of the wall of the vein may be dilated so as to form a globular sac; there may be only one such dilatation, or a number in the same vein, or a number of veins affected at the same time. A number of contiguous and anastomosing veins may be dilated, both in a cirsoid and varicose form. Hypertrophy of the muscle cells in the middle coat and hyperplasia of the connective tissue in all the coats ensues.

The valves, in harmony with the vessel wall, become hypertrophied and for a time perform their function; but soon they are insufficient to span the widening stream and as they become useless are reduced to fibrous cords. Behind the valves the blood finds a quiet recess where it frequently stagnates and a thrombus is formed, which remains as an obstruction to the venous circulation. After a while the surrounding tissues thicken and the fibrous tissue which forms will spread, involving the blood vessels, and will encroach on their caliber and strangle them. In this way the vessels of the skin over a varicose vein are destroyed and by the loss of the skin an ulcer is formed.

Again the vein as it approaches the surface may by its pressure cause thinning instead of thickening of the surrounding tissue; its walls finally become thinned and rupture, and in consequence hemorrhages may ensue, which are often serious and may even prove fatal.

General treatment consists in attention to the bowels, building up the general system; removing the cause if possible, and regulating the habits and diet.

Rest for the limb is essential; if possible place the patient in the recumbent position and elevate the affected limb, not only until the ulcer is closed but until the scar becomes sufficiently resistant. If the patient cannot afford so much time, the recumbent posture for even a short period will decrease the severity of the case, diminish the ulcerated surface and make it yield to treatment more readily. An elastic stocking should be ordered at once and the patient made to wear it whenever he is on his feet. Those who cannot remain in bed all the time on account of their work should be advised to stand as little as possible and to stay in bed on Sundays, holidays, or whenever possible. This advice is readily accepted and it has proved very beneficial in many of my cases.

Rubber or any other kind of bandages are much inferior to the elastic stocking, and in fact I have never seen a patient who could apply the bandage properly, it is either too tight, or too loose and it does not accomplish much.

The treatment of the ulcer itself that I use consists in thorough antisepsis of the wound and surrounding skin, procured by first washing the entire leg with soap and water and then with 1-1000 bichlorid solution, or a saturated solution of boric acid; brushing the ulcer with carbolic acid, then covering it with cotton dipped in alcohol, drying it carefully and dusting on quite thickly bismuth subnitrate and starch powder, in equal amounts, and a dressing consisting of a small pad is held by a gauze bandage or by small strips of adhesive plaster. The elastic stocking is then put on.

The powder is changed every morning by the patient, the wound is washed once every two or three days as stated above, inspected, and if necessary, the carbolic acid and alcohol application is again made and the powder reapplied.

The indications for the carbolic acid and alcohol applications are when the retrograde changes equal the reparative, or when the former exceed the latter. When the surface of the ulcer is covered with a layer of healthy granulation tissue composed of round cells closely packed together and supplied with a rich capillary network of blood vessels, the above treatment is all that is necessary.

If the granulations are irregular, unhealthy, protruding above the edges of the wound, with ill smelling, purulent or seropurulent discharges, the surface should be curetted thoroughly before the above applications are made.

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EDITORIAL

Public Sanitation in America.

"Harvard University has taken an advanced step in offering the degree of Doctor of Public Health (D. P. H.)." This announcement in the *Boston Medical & Surgical Journal* (July 28, 1910) in an article on the training of health officers, has been echoed in the *Journal of the American Medical Association* and is now reverberating in the columns of the lay press. Both in its form and substance the statement is calculated to arrest attention and awaken thought. The lesson pointed by the form of the announcement, by the note of complacency, almost of triumph, which it strikes deserves to be dwelt upon perhaps even more than the matter of it. That at the long last an American medical school should have arrived at the organization of a regular course of instruction in State Hygiene and the offering of a diploma in the same, is certainly a fact worth recording. But that this should be hailed, and rightly hailed as an "advanced step" illustrates the deplorable condition of public sanitation in America in this year of grace 1910. What Great Britain has been doing for thirty or forty years is an "advanced step" in Massachusetts, whose renowned Board of Health has long been the model for the rest of the country!

It is commonplace knowledge to those acquainted with public health legislation and practise in Europe that America is an absolute barbarian in these matters. Had we any standards of comparison except those domestic ones which inform us, for instance, that Cincinnati or St. Louis is even more abominable in its methods of sewage disposal than Cleveland or Milwaukee, or that the Mayor of Grand Gulch takes even less stock in the efficacy of vaccination as a prophylactic against smallpox than the Superintendent of Parks of Little Gap; had we even anything like decent vital statistics, the truth could not have been so long concealed from that singularly purblind person (in matters medical), the man in the street.

The almost universal mingling of sewage and drinking water in our lake and river cities; the fatalistic submission to an enormous typhoid incidence as to the will of God, the dangerous paltering with smallpox so often witnessed at the outbreak of an epidemic, sometimes in spite of most praiseworthy efforts on the part of able and zealous Health Officers; the very imperfect and far too infrequent collection of garbage; the miserable paving and unspeakable filth of many streets and the total lack of "public comfort" stations in nearly all our cities; the absence of any effective machinery for the abatement of nuisances or the resolute refusal of such machinery to work; the want of proper checks on overcrowding in congested neighborhoods, not to speak of overcrowding in street cars, where the finest opportunities for the spread of disease must exist in that weltering, sweltering, coughing, perspiring and half-suffocating mass of freemen which never fails to astonish the newly arrived serf from Europe—things like these are a disgrace to the nation. It is time that the nation should take the "advanced step" of learning that it is disgraced. Once it does this there will be hope of its taking the many steps necessary for amendment.

Why does America, in general so progressive, remain so medieval in matters concerning the public health? It was not so in the introduction of steamships, railroads, and the thousand and one mechanical inventions of the "wonderful century." The Darlington and Stockton Railway in England was opened for passenger traffic in 1825. In 1826 the Quincy Railroad in this country was finished. How would it have sounded if in 1860, let us say, the *New York Tribune* had announced that the "advanced step" of connecting Boston and New York by a steam railroad was about to be taken? Our Boston contemporary finds that it is "politics" which has retarded progress in Public Health in America. Truly our political methods, our machines and the things these machines manufacture and set up to rule us have much to answer for. But they did not prevent our getting betimes the railroads we were in need of because the public saw early and even more clearly and steadily the benefits the railroads would confer, and were able in great measure to calculate those benefits in dollars and cents, inuring to, or saved by, the talking, agitating and voting units of said august public itself. And we shrewdly opine that the only sense in which "politics" can be said to have retarded the advance of Public Hygiene and Preventive Medicine in this land is that the "politicians" instead of awakening a drowsy public to the enormous importance of the public health, simply pursued their little game while the public slept, with the usual success to themselves of a game conducted under such circumstances and to the public with neither more nor less than the usual detriment. If "politics" has been particularly ruinous in public sanitation, it is simply because of those matters of life and death the public has been particularly ignorant. They have never yet been sufficiently instructed to see the enormous benefits, often in this case also measurable in dollars and cents, which a scientific system such as exists in England or Germany would confer upon the community as a whole and upon the families and individuals which compose it. On the other hand, the "politicians" have, of course, clearly seen certain tangible prizes, not very resplendent it is true, but still shining with subdued radiance among the more dazzling spoils of victory and thanks to the public apathy, capable of being appropriated by "workers" who are not working for a D. P. H. We are not speaking of individuals nor of individual localities. We know that high-minded and able men have often, and more and more commonly, we are glad to perceive, in recent years, been appointed to Public Health positions, especially the more important ones, without reference to their political connections. But the worst that "politics" can have done to Public Health development is as stated. The real retarding factor has been the public ignorance. That is the crux of the Health situation today. In America the people perish for lack of knowledge and of the application of knowledge which, if applied as in those European countries where public sanitation is most highly developed, would save hundreds of thousands of lives and prevent millions of cases of sickness each year. We can on occasion sing "Hail Columbia" with the best. But this is not an appropriate occasion. America, we repeat, is disgracefully behind Europe in her Public Health Service, and the main reason is that the voting public, which must do here what enlightened principalities and powers may do yonder, is ignorant and uninstructed as to the vast, immediate and practical benefits which flow from an efficient Public Health organization. Therefore Public Health is in politics. Given an instructed public opinion, the dfficulties created by our constitution, by the collision and overlapping of our medley of national and state and city and county authorities will be overcome. A supply of good sanitary officials, not merely of medical officers but of men corresponding to the often highly trained sanitary inspectors of Great Britain, will be forthcoming as soon as the public understands what good sanitary service is and the indispensable conditions for obtaining it. Till then we do not anticipate very notable results from the mere establishment of Public Health curricula in medical schools, except as a part of an educational campaign aimed first at the profession, then through the profession at the public. A supply of sanitary experts, except as it advertises the needs of the situation, will hardly stimulate the demand. On the other hand a demand for experts will speedily stimulate the supply. In Great Britain a veritable rush to the previously almost empty Public Health Laboratories took place when legislation favoring the appointment to Public Health positions of men with Public Health diplomas was assured. Yet the organization of courses in State Medicine culminating in a specialist degree was itself an object lesson to the public and did something to educate them to the necessity of comprehensive sanitary legislation, as well as in the meantime supplying trained men for such positions as existed. Once in these positions, whenever they were supported by a sufficiently powerful and enlightened local sentiment, the professional sanitarians did wonders. Some of the plague-spots of the land were transformed, if not into veritable gardens of Hygeia, at least into decently healthy towns. Soon the dwindling death rate in such places as Glasgow and Manchester began to rivet the attention of the profession, then of the more intelligent laymen and at last of the whole nation. Today every sanitary expert in the world regards it as one of the greatest triumphs of Public Sanitation that in London with its eight million people the death rate has been brought down to 15 in the thousand. And this in a country with perfect vital statistics where no death goes unrecorded and a population thinned as regards its best lives by the emigration of so many young adults and on the whole worse fed than our own. The reduction of the still excessive infant mortality which is now in progress cannot fail to render the British mortality statistics still more favorable. We shall obtain similar results when we have educated our masters.

A Valuable Historical Reminiscence.

Under the title of Modern Antiseptic Surgery, Dr Keen, the Gladstone of the surgical profession, contributed an article to the *Journal of the American Medical Association* of April 2, 1910, one of the series prepared for the Council on Defense of Medical Research. While designed for general public circulation it is of rare interest to all modern physicians. There are very few medical men of the present day whose activities have extended over the three periods upon which this venerable and distinguished surgeon has touched with such charm and vividness, the product of a deeply appreciative and vastly fruitful personal experience.

Dr Keen graduated in medicine in 1862. For 14 years he worked under conditions of wound treatment which had been altered but little since the introduction of ligatures. The domination of "laudable" pus" is emphasized by a description of an operative case of the period, conducted with the "clean hands of a gentleman," with instruments used directly from a velvet-lined case and rinsed only in ordinary water if by chance they were allowed to fall on the floor; the pus-ladened sea sponges, the unsterilized silk ligatures left long to hang out of the wound for subsequent tugging, the wound closed with ordinary needle and thread, and the final dressings of rags covered with grease or soaked in cold unsterilized water; the universal suppuration, the rotting of the ligatures, the frequent occurrence of and great mortality from secondary hemorrhage, the prolonged convalescence. Five cases of secondary hemorrhage in one night after the battle of Gettysburg exceeded the number seen in his experience in 34 years following 1876. The large majority of compound fractures died of infection, as did also over half of the gunshot wounds of the knee-joint, either with or without amputation. Hospital gangrene, which most of us have never seen, was very common and showed a mortality of nearly 50%. Tetanus infected a large number of wounds.

The development period of antisepsis is traced from the earlier experiments with the contaminating effects of air, through the elimination of dust by Pasteur in 1864, and the classical flank experiments of Lister, to much of whose work detailed references are given. The use of carbolic acid was suggested to Lister by the successful treatment of sewage at Carlisle, England.

His epochal experiments in which ligatures were buried in 1867-1868 were followed by his demonstration of the use and absorption of catgut in the latter year. It is to be regretted that this section of the paper suffers from the lack of an entertaining personal description of an operation under the carbolic spray, but this is an experience with which many of the older operators of the present time were personally familiar, and of which we have all heard first hand.

While the marvelous results of the antiseptic methods are known to all, yet a few striking illustrations of the effects as immediately seen when the contrast was so strongly marked lend emphasis to our present beliefs. In 1874, 80% of all wounds at the main hospital of Munich were subject to hospital gangrene; during the following six months, after the introduction of the method by Nussbaum, not a single case occurred. In the Royal Hospital at Glasgow, Lister himself abolished pyemia, erysipelas and hospital gangrene in the face of conditions which had all but overwhelmed the hospital only a short time before. Such reminiscences should be reverently studied and treasured to duly remind us of the terrible heritage from which we have been so happily delivered. C. E. B.

The Geographical Distribution of Protozoan Infections.

We of temperate climates are apt to view the protozoan infections with a certain aloofness of spirit. Of the better known of these diseases, amebic dysentery and malaria, the former is often called tropical dysentery; Osler says "it is the commonest variety throughout the United States." Malaria, which is geographically perhaps the most widespread of all protozoan infections, is a rare disease in Cleveland and it is difficult for us to realize that the annual morbidity rate in India due to it is 100,000,000, with an annual death rate of over 1,000,000. Of the spirochaetoses syphilis and Vincent's angina are widely distributed. It is the protozoan blood infections—other than malaria—that we are prone to think concern the man on the other side of the world more than they do us.

In Laveran and Mesnil's "Trypanosomes et Trypanosomiases", published in 1904, is given an outline map of the world showing the distribution of the trypanosome infections of the larger warm-blooded animals. North America is left off entirely and the entire Western Hemisphere shows only a relatively small area of infection, the mal de Caderas due to *Trypanosoma equinum,* in central South America. Of the continents of the old world Australia is left off the map and Africa shows the most widespread distribution, both as to the area involved and the number of species of trypanosomes concerned. Human trypanosomiasis, known clinically as Congo fever and sleeping sickness, is represented by a very small area covering Gambia. In Europe are shown foci of infection as far north as Hungary and in Asia the southwestern, southern and southeastern parts of the continent as well as Sumatra, Java and the Philippines show areas of infection. In this map, although foci are shown extending down to the southermost tip of Africa, a latitude of 30° South, and as far north as Hungary, a latitude of 50° North, the chief zone lies nearest the equator, particularly in Asia and in Africa, to a less degree in South America. We think of trypanosome infection as a tropical disease. As a matter of fact, infection of small mammals, of birds and of cold-blooded animals by trypanosomes is most widespread over the surface of the earth and there is no *a priori* reason why infection of larger animals should be limited to the torrid zone. As is true of malaria, the distribution is dependent, not upon climate, but upon the secondary insect hosts which transmit the infection.

If we compare Laveran and Mesnil's map of 1904 with a similar one published in 1909 in Doflein's "Lehrbuch der Protozoenkunde", we find that the extreme limit of trypanosome infection has been moved downward, so far as the Western Hemisphere is concerned, to almost the extreme tip of South America, a latitude of 50° South, equal to the extreme northern limit in Europe and comparable to the parallel which passes through Vancouver and southern Canada. Australia shows the presence of surra, due to *Trypanosoma evansi;* and sleeping sickness, instead of being limited to a very small area on the western coast of Africa, occurs throughout a large portion of the central region of the continent. A comparison of the two maps indicates a considerably more widespread distribution of trypanosome infection in 1909 than in 1904.

1909 is not such an unrememerable while ago. Since Doflein's map was published foci of sleeping sickness have been found in southern Asia. We know that dourine, an infection of the horse due to *Trypanosoma equiperdum,* has occurred in the western United States. But most important of all is the discovery, by Chagas, of the occurrence of human trypanosomiasis in Brazil. The parasite of the South American disease is different from *Trypanosoma gambiense* of the African disease and the resulting infection, as it occurs in Brazil, is clinically quite different from sleeping sickness. The Brazilian infection is transmitted by one of the *Hemiptera,* an insect belonging to the genus *Conorhinus,* one species of which, known commonly as the blood-sucking cone-nose, has a fairly wide distribution in North America. The important point is not that human trypanosomiasis has spread from Africa to South America, but that it has probably been present in the latter situation as long as in the former and that it took ability of the kind possessed by Chagas to enlighten us.

What is true of the trypanosome infections apparently holds also for other protozoan blood infections. *Herpetomonas* or *Leishmania* infection causes in India the disease known as kala-azar, in other parts of Asia oriental sore and in Italy infantile splenomegaly. In the Panama Canal Zone Darling has described as histoplasmosis an infection by a protozoan parasite which he has named *Histoplasma capsulatum.* The life cycle of the latter has not yet been worked out, so that its zoological position cannot be definitely determined. Morphologically, in the tissues, the parasite bears a marked resemblance to that of kala-azar and the pathological change occurring in the spleen and liver in histoplasmosis is strikingly like that which characterizes kala-azar. Here again, as in the case of human trypanosomiasis, it would seem that a particular kind of infection is not limited in its distribution to the old world.

Infection by a member of the genus *Piroplasma* or *Babesia* was first described in the United States in the cattle disease known as Texas or tick fever. Piroplasmosis of other species of mammals is now known to be most widespread in geographical distribution. Up to the present *Babesia* infection of human beings has not been definitely proved, although Wilson and Chowning have held that the "spotted fever" of the Rocky Mountains is such an infection. While the work of these observers has not been entirely confirmed the announcement that a human disease is due to infection by a member of the genus *Babesia* ought, in view of the widespread geographical and species distribution of such infection, occasion no surprise.

What we have attempted to point out is that the geographical distribution of protozoan infections, particularly blood infections, is not a matter of climate. Primarily it is dependent upon the distribution of the insect hosts which act as carriers of the infections. Secondarily it is a matter of extensive search and intensive research. The unequal geographical distribution, as we know it at present, of such infections is apparent rather than real. Further work will show that the proper association of warm-blooded victim, insect host and parasite, rather than temperature, is the essential factor in determining the limits of protozoan infection. O. T. S.

Marcus Rossenwasser.

In the year 1864 Marcus Rossenwasser finished the high school course in Cleveland and departed for Europe to pursue his medical studies. He was then 18 years old, a mature, serious and earnest young man. He went to Bohemia, to Prague, the home of his ancestors and where he and his brothers were born, and whence he had emigrated 12 years before. His inspiration for work came from his own home where habits of study were most earnestly encouraged, discipline enforced and character builded. From Prague he went to Wurtzburg because the University course there could be completed in four years if one declared his intention of not practising in Germany. There he remained the required time, with an occasional semester in Prague and Vienna, and there he took his degree in 1867 and returned to Cleveland with the purpose of entering the general practise of medicine.

He had prepared himself particularly in obstetrics and soon was very active in that department. In the early seventies, the first years of St. Ann's Maternity, he was the chief reliance of the house in difficult cases and showed his proficiency on many occasions. In his daily practise his work was arduous and laborious for the large foreign population in his neighborhood came to rely almost exclusively upon him. Strong, able and willing as he was to cope with hard work he could not sustain the unremitting toil and his health in a measure declined, so that he determined to follow inclination and confine his endeavors to gynecology. He went to Boston in 1888, made a long and careful preparation and on his return limited his practise, but did not give up his general work for five years longer. He connected himself with the Wooster Medical College, of which he was Dean for a period of five years, and with the Cleveland General Hospital, as Professor of Gynecology and was known from then on as a specialist in the department of diseases of women until his death September 4, 1910.

There are such difficulties in the way of turning, in these modern days, from a medical to a surgical practise, that few only have been able to accomplish it successfully. Dr Rosenwasser became, however, more generally known as a surgeon than he had been as a practitioner. His success was based on his sound and comprehensive mind rather than upon his technic. He was a surgeon from his brain outward rather than from his fingers inward. He was therefore essentially wise and conservative and rarely venturesome. Naturally he made a distinctly personal place for himself and was constantly entrenching himself in the confidence of his clientele.

He was especially well qualified to act as a family practitioner for he was intelligent, trained, painstaking, sympathetic and constant. His work was a high average and even. There was a reliability in it that imparted confidence to those about him and a steadfastness and caution that reduced his percentage of errors to a minimum. He was a man of excellent judgment, in fact he had the judicial quality of mind to a high degree whereby he could eliminate from any question, the superfluous, the accidental, or the personal and discover the essential elements involved, upon which alone a solution must always rest. He saw clearly and with much penetration. This quality of mind and a certain power of abstract and philosophic thinking, combined with an inflexible honesty of purpose, gave to his mental processes an unusual lucidity and directness that generally led him to a sure conclusion. Where he failed is where most of us fail and he succeeded where many of us fail.

His family life was particularly beautiful and his friends numerous and staunch. As was said at his obsequies his influence in his house was so strong, so wholesome, and so gentle that it was like that of a patriarch of old.

One of the pleasant things that came into his life was his association with the Jewish Orphan Asylum. This institution was founded in 1868, the year Dr Rosenwasser returned to Cleveland. He immediately became connected with it and continued to act as its medical advisor until his death, a period of 42 years. That alone would be a tribute to any man. To go there now is like walking in his footsteps. On the fortieth anniversary of the foundation of the asylum, which was as well the fortieth anniversary for the physician, he made a substantial contribution to this institution, which he very much loved. How many times he must have found work there a physical burden, how many times he must have been weary yet he was never satiated!

He was fond of the medical institutions of his city, was always closely associated with them, and had many intimates and admirers among the best elements of his profession. In his last will and testament he left $10,000 to the Medical Library Association, the income of which is to be used for the purchase of books. This gift will always serve as a memorial of one who was a thorough physician, a student and a lover of books; of one who had the heart of a gentleman and was fair and faithful to his friends; of one who carried his burden, whatsoever the world laid upon him.

Our late colleague lived in that interesting transitional period of medicine, when art languished and science expands, when diagnosis rests on positive demonstration rather than on deduction, when the elaboration of multitudinous details absorbs the time for reflection. First came a scientific training, then an engrossing practise that took him from his books, then a second long period of study from which he emerged to a life less active but richer and broader.

He died in an acute attack of angina pectoris. In the last days of his long agony an increasing sweetness and resignation stole over him and when the end came it was the end of a long and a well rounded career.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Hemorrhagic Disease: In the *American Journal of the Medical Sciences* for July, Hermann Schwartz and Reuben Ottenberg consider the hemorrhagic disease of the newborn, with special reference to blood coagulation and serum treatment. Their object is to draw attention to the little-recognized, clinically important fact of delayed or lost coagulation in the hemorrhagic disease of the newborn and to discuss this in the light of recent investigations on the physiology and the pathology of blood clotting. As to therapy they found no effect on the coagulation in one case in which calcium chlorid was administered. The use of serum by subcutaneous or intravenous injection in the treatment of hemorrhagic conditions due to diminished coagulability is new, and its value is still *sub judice.* Many favorable cases have been reported, most of these are rather unsatisfactory as they are simply reports of recoveries, after serum injections, in conditions many of which are recovered from spontaneously. All the recent writers insist that the serum must be fresh, on account of the well known disappearance of fibrin ferment from serum on standing. The studies on the serum treatment have been almost entirely clinical. Baum found in three cases of hemophilia, that in two of them serum injections were absolutely without influence, and in the other case seemed to have a slight effect. Schwartz and Ottenberg found that in two hemorrhagic cases (of jaundice) the injection of fresh serum was futile, what has been said does not apply of course to the local application of fibrin ferment in the form of serum to the bleeding point. There is one other therapeutic measure to consider. Transfusion since Crile reintroduced it has been successfully used in many hemorrhagic cases, particularly in those due to prolonged jaundice. Recently its successful use in a case of hemorrhage of the newborn has been reported. Their conclusions are as follows: (1) Impaired blood coagulation is the immediate cause of uncontrollable hemorrhages in the newborn. (2) This is probably due to the destruction of, or interference with, the production of thrombokinase. (3) Bacterial infection is the most frequent underlying cause of the disease, but (4) syphilis alone can cause the disease without bacterial infection. (5) The value of serum injections is doubtful. (6) It is important that transfusion should be tried when ordinary measures have failed.

Remedies Prescribed: The *Therapeutic Gazette* for July says that it cannot be denied that the promiscuous prescribing of many remedies has been in the past one of the faults of the profession, and particularly is the so-called "shotgun prescription" or practise of polypharmacy to be condemned. There can be no doubt that in a considerable number of instances the best results will be obtained by choosing the best remedy for a given case, and giving only one. On the other hand there can be no doubt that on certain occasions the combination of drugs for joint effect is most useful, as in the case of the iodids and mercury in the treatment of syphilis; or the use of calomel and quinin in malaria, or again the use of sodium bicarbonate, and the salicylates in the treatment of rheumatism. In this connection it is interesting to note the curious difference in the attitude of French and German physicians concerning drugs. French chemists and physicians during the last 15 or 20 years have produced practically very few remedies, and most of these have usually failed to maintain the place which was claimed for them, notably the cacodylates. At the same time the French school of therapeutists seem to be extraordinarily optimistic and frequently report results obtained from plans of treatment which physicians in this country can not obtain. It is also true, so far as we know, that the teaching of therapeutics in most of the German schools is deficient, and it is certainly true that the Germans manifest less optimism in regard to the therapeutic effects of the older drugs than do their French colleagues. Nevertheless, German chemists and physicians during the last 30 years have presented new drugs or remedies, not by the score but by the hundreds. An examination of the German journals will reveal that there is an extraordinary degree of optimism in regard to most of these synthetic drugs. The early reports concerning all of them are practically always favorable, and one wonders how much this is due to commercial influences and how much it is due to the enthusiasm which is often connected with a novel thing. As a matter of fact those who read the French and German articles dealing with drugs, and then try them in their own practise, have long since learned that disappointment not infrequently is their lot, but they cannot afford to cast to one side all new Gallic or Teutonic remedies as useless, because now and again one is found which proves most valuable.

Gastric Ulcer: Albert T. R. Andresen in *Therapeutic Medicine* for July summarizes the medical treatment of gastric ulcer as having for its basis the attaining of rest, and the sparing of the diseased organ. Rest is obtained by the horizontal position of the body, sparing of the organ by the prevention of all chemical or mechanical irritation. The treatment resolves itself into that for the bleeding and that for the non-bleeding, or only occultly bleeding ulcer. The treatment of an acute hemorrhage consists in stopping the present hemorrhage and preventing a recurrence. While death from hemorrhage is rare, cases do occur occasionally and treatment should be prompt. Rest in bed with an ice bag over the epigastrium hastens thrombosis of the bleeding vessel. Nothing should be given by mouth as peristalsis will aggravate a hemorrhage. Morphin in large doses by hypodermic injection is necessary to quiet the patient. The use of styptic measures is of doubtful value. Ergot or gelatin (in 1% sol'n) hypodermically or rectally may be cautiously used. Einhorn uses adrenalin hypodermically; Fenwick, infusion of adrenal glands per rectum. Calcium chlorid may also be given per rectum.

Menstrual Pain: The *Medical World* for August treats of menstrual pain, as textbooks are notoriously deficient in dealing with the therapeutics of this common trouble. Quite generally they advise dilation of the os, or of curettement, in conditions in which the experienced physician knows such methods are absolutely useless; and the same advice is given in conditions in which such procedures afford relief during only one or two succeeding menstrual flows. Dysmenorrhea is due to various pathological causes and may require surgical measures, but many cases may be relieved by medication. Women universally know the benefit to be derived from heat in the menstrual pain, they often "go to bed to keep warm" during this time. This is good treatment and may be well supplemented by hot sitz baths, hot foot baths, and by hot vaginal douches. Fluidextract of hydrastis, 15 drops, with 30 drops of the fluidextract of viburnum prunifolium, given three times a day over a long period, exercises a positive trophic action on the uterus and adnexa.

A combination of the tincture of gelsemium and cannabis indica, three drams of each with enough compound tincture of cardamon to make three ounces, if given in teaspoonful doses before meals and on retiring will, in many cases, solve the difficulty if it be begun several days before the expected period and continued until the flow disappears. The coaltar derivatives are of service in relieving the pain, and there is no danger of engrafting a habit as does the use of morphin: if there is heart trouble it is better not to give them though such danger may be guarded against by giving a half ounce of whisky or a single dose of strychnin with the first dose of the coaltar drug. Veronal in 7 to 10 grain doses, will control sleeplessness, but unless pain has been relieved is generally useless. A dram of the aromatic spirits of ammonia in water every three or four hours is an admirable stimulant, and fits in well, when there are scruples about giving liquor. Cimicifuga, in the congestive form is efficient, and may be given in repeated doses until relief is experienced. If the discharge is either too scanty or too profuse, and is dark and clotted pulsatilla may be given in two drop doses hourly during the flow, and smaller doses during the intermenstrual periods with promise of success. Only as a last resort should morphin be given: there can be no condition in which the danger of habit formation is greater.

Senility: I. L. Nascher in the *Medical Council* for August considers the treatment of disease in senility, stating a few general rules to be observed. At no period of life is the elimination of waste material so important as in old age, chronic constipation due to loss of intestinal peristalsis is a common complaint among the aged. This can sometimes be relieved by change of diet alone, more often we must resort to cathartics. Massage and mechanical rollers are useless, and aloes is the best peristaltic stimulant; podophyllin acts like aloes, while cascara stimulates peristalsis and the intestinal secretions and cause little griping, but its action is slow. At the beginning of a disease in old age, a rapid cleaning out of the bowels is desirable, and for this purpose the ordinary compound aloin pill can be used. Most of the ordinary diaphoretics and antipyretics are cardiac depressants, and hence contraindicated in senile disease but the spirits of nitrous ether is an exception. The reduction of high temperature in diseases of old age is a serious problem, as the most powerful antipyretics cannot be employed on account of their depressant effect, unless combined with rapidly acting cardiac stimulants. As the heart is already weakened in old age, owing to the senile changes, and further weakened through the disease causing the high temperature, drugs likely to increase the depression should be avoided: quinin with caffein is probably the safest of drug combinations that can be used in febrile conditions. Sponging with tepid water and alcohol will often reduce the temperature, while the cold pack or bath may produce a fatal shock. The old generally suffer from a form of insomnia, in which they cannot sleep for more than a few hours at a time, but they take frequent naps so that the total amount of sleep is not less than they require. Nothing need be done for this. Real insomnia with prolonged wakefulness and insufficient sleep is more serious in senility than in maturity, and drug treatment is more dangerous. A warm bath often will be followed by sleep, but if it cannot be given and we must fall back on the powerful hypnotics, veronal will be found safest and most efficient. As to drugs in old age, many of the most useful cannot be used in the same manner in senility as in maturity either because they act differently on the senile, degenerated tissues, or have different incidental effects, or because they are absorbed differently. Hypodermic medication must be employed if we want rapid action; rectal medication and alimentation is generally useless in old age.

Diabetes: Alfred King in the *Monthly Cyclopedia* for July believes that diabetes mellitus is an infectious disease, due to the presence in the blood of the yeast fungus, *saccharomyces cerevisiae.* In 40 patients he obtained a pure culture of the fungus from a drop of the blood of every one with one exception. To regulate the diet of a diabetic is most important and calls for much study and care. Starchy foods promote the functional activity of the digestive organs; there is a craving for them, especially bread, in the diabetic, and he believes this demand should be granted with limitations. Glucose is less injurious than acidosis, and three ounces of starch per day prevents the formation of acetone and diacetic acid. He believes in limiting starchy foods to not less than three ounces per day, and in satisfying the craving of the patient as far as possible. Blunting this desire by drugs is injurious, and to try to gratify the taste with an imitation food containing no starch is a senseless deception unworthy of an intelligent physician. He does not believe in gluten foods, looking upon them as injurious. He does not agree with those who stop at once all carbohydrates on beginning treatment: mild cases do not require it and in severe cases it is dangerous, and limiting patients to one ounce three times a day is sufficient for all practical purposes. As to drugs he believes tonics like iron, arsenic, strychnin, quinin, and the hypophosphites, especially those invigorating the nervous system, are valuable for relieving the existing weakness. For acidosis sodium bicarbonate should be given in half dram doses every two, three or four hours. Antiseptics to retard the action and growth of, or to destroy the fungus have been found of no use. There is no antiseptic which can act solely upon germs when in the tissues of the body; they must be combated by assisting natural efforts for immunization. The vaccine treatment stands alone as most effective. It restores the strength and sense of well being, relieves the thirst, checks the polyuria, reduces the sugar content of the urine, and lessens the frequency of micturition. The vaccine first used was made from a fungus originally obtained from urine, but that from the blood gave a somewhat better effect. Five cultures were made from a fungus obtained from the blood of five different patients, and a vaccine was made from the most actively growing. The frequency of treatment is important. Twice a week soon brings the opsonic index above normal, but it is more effective than that. He has noticed that on the day following the use of the vaccine, the quantity of urine would drop off from 4 to 20 ounces and then come up again the following day, on changing to daily administration he has seen two cases drop 40 ounces in two days. In four serious cases in young people about 20 years of age, under the use of vaccine they felt stronger and better and the sugar decreased, as well as the other products. These cases required at least six weeks treatment to get the total quantity to remain below four pints, and a course of hospital treatment of several months to get the best results, others improved greatly. He believes this line most promising, and has great hope that it may prove of use in determining the cause and in leading to a successful treatment of an obscure disease.

Chronic Nephritis: Heinrich Stern in the *American Journal of the Medical Sciences* for August asserts that in spite of the universally accepted fact that chronic renal disease may be one of the more or less remote sequences of a systemic infection, it is nevertheless true, that entirely too little attention has been and is bestowed upon the connection between acute systemic infection, that is the transmission of the infective agent by the blood current, and a considerable number of permanently injured kidneys. The lesions in some forms of acute nephritis are of brief duration, and the kidneys recover their normal state and function just as do the lungs after an attack of lobar pneumonia. Other types of acute nephritis are characterized by lesions tending to chronicity, and the original condition of the kidneys will never be restored. We are, however, justified in assuming that kidneys acutely affected at one time are thereafter possessed of a lowered degree of resistance in many and of a diminished functional activity in some of the instances. Exciting causes which will not readily affect the entirely sound kidney to any extent bear upon a weakened organ, and tend to call forth therein further damage. Exposure to telluric conditions of cold and dampness, continued physical and mental strains, excesses *in baccho et venere,* factors which are generally held to be excitants of renal disease, will be conducive to the production of nephritis in proportion to the lack of resistance of the kidneys. Even the slightest provocation may effect the non-resistant kidney and occasion intermittent or permanent manifestations of an active morbid process. While therefore an acute nephritis is not necessarily followed by a chronic degenerative renal state directly traceable to it, it evidently prepares the soil for subsequent invasions, and textural and functional decline.

Whooping Cough: Commenting upon an article on whooping cough by E. F. Cushing, which he pronounces the best on the subject he has seen, Larp in the *Indianapolis Medical Journal* advises in epidemics of this disease, the old but good combination of hydrate of chloral and bromid of sodium. Too little attention he believes is paid to the nervous element of the disease. If an agent is needed for a steam atomizer there is none better than one dram of compound tincture of benzoin to one pint of water. Sometimes very good results are obtained by a combination of the tinctures of hyoscyamus, gelsemium, and lobelia with hydrochlorid of heroin. He has frequently noticed than an imitation cough leads to a paroxysm. For instance, a child will often imitate the cough of another child in the same room and this is soon followed by a genuine paroxysm, hence isolation is a factor in treatment under such circumstances. J. Beard in the July number of *Merck's Archives* has had an eminently satisfactory experience with euquinin in whooping cough. The daily number of paroxysms is rapidly lessened, and inside of a week the case resolves itself into a mere bronchial catarrh which yields readily to simple remedies, such as squill and ipecacuanha. The infectiousness of the disease too he says is almost certainly diminished. To have the desired effect, he uses the drug freely. He has many times given 5 to 7½ grains of euquinin three times daily to children under five years.

Thirst Fever: The *Medical Record* for May 28 states that variations in the temperature of the young infant, as the result of the most insignificant causes are common occurrences. What in the adult would be a hardly noticeable gastro-intestinal disturbance is capable in the baby of producing a temperature as high as 104° or 106°. A troublesome tooth about which there is but slight congestion may well cause a fever high enough to result in a panic in the mind of the watchful mother, and in a hurried call for the physician. A child apparently desperately ill with hyperpyrexia may be seen four hours, after a thorough catharsis, playing happily in its cot. Recently the German pediatrists have called attention to another cause of sudden fever in the infant, the so-called "salt fever" produced by subcutaneous or rectal injection of saline solution, in which a few hours later, the temperature rises rapidly, remains so for a few hours and then as rapidly falls. In the *Berlin. klin. Wochenschrift,* Erich Müller reports two cases of a condition first described by Crandell in 1899, but as yet not widely appreciated. This is closely related to the "salt fever," but is due to concentration of tissue salts, not by the administration of salt but by withholding of water. In his cases a few hours after withdrawing the child's food for one reason or another, a rapid pyrexia appeared, lasting until either milk or some other fluid was given. First considered to be cases of fever from hunger they were soon shown to be prevented if the milk was replaced by weak tea and it was conclusively proved that the important factor in causing the fever was thirst. The possibility of such cases of "thirst fever" should be borne in mind, by the physician when ordering starvation in the gastro-intestinal affections of childhood, or when suddenly confronted with an inexplicable case of fever in the young infant.

Sodium Biborate: J. P. Esch in the *Journal A. M. A.* gives a method which he has employed with complete success in pleuritic effusion, empyema, and hydrocele. The agent is sodium biborate in two per cent solution injected after aspiration. In one case of empyema in which he had aspirated seven times, he, after withdrawing the pus, injected about a pint of a two percent solution of biborate of sodium at a temperature of 100° F. allowing the solution to remain in the cavity about 10 minutes; after the solution had been withdrawn there was no recurrence and the patient made a rapid recovery. Similar good results followed its use in pleurisy with effusion and also in hydrocele in which after the withdrawing of the solution he strapped the scrotum and no recurrence followed. He has found no failure in its use and its painlessness is a great point in its favor.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph. G., Ph. D.

Biological Standardization: An interesting contrast to the recent paper on this subject by H. C. Wood, Jr. (this JOURNAL *9*, 302) is an important paper presented at the Richmond Meeting of the American Pharmaceutical Association by Hatcher and Brody (*American Journal of Pharmacy, 82,* 360. These investigators consider that the technic of biological testing does not necessarily mean expensive apparatus or elaborate details, but can be made simple enough to be performed by the retail pharmacist and that with the apparatus he has at hand.

The rest of the paper described the authors' method of standardizing the drugs of the digitalis group; the standard chosen being the "cat unit" which can be defined as the amount of crystalline ouabain which is fatal in about 90 minutes to a kilogram of cat—the chemical being injected into the femoral vein. This cat unit equals 0.1 milligram of ouabain or one-ten millionth the weight of the cat. The assay of the several drugs or their preparations consists in injecting into the cat a definite quantity of the medicament, but less than the lethal dose. This is followed by an injection of an ouabain solution of definite strength until death ensues. Comparing the cat unit of ouabain with the amount of ouabain plus the medicament used, the amount of the medicament replacing ouabain can be deduced. Among the tables given is one showing equivalents of the various digitalis bodies. Expressing ouabain as 0.10, digitoxin crystalline is 0.30, Strophanthus hispidus is 1.50, Strophanthus Kombe is 3.00, and English digitalis is 92.0.

Removing Protargol Stains: Use a little tincture of ferric chlorid which turns the stains green, then use a little oxalic acid solution and finally wash with water. So says Clare (*Bull. Pharm.,* through *Druggists Circular, 54,* 410).

Solubility of Alum: Finding a mixture of alum 2 drams; liquefied phenol, 1 dram; glycerin, 6 drams; water to make 6 ounces; deposited crystals of alum, Dunlop (*Pharm. Journal,* through *Druggists Circular, 54,* 411) after experimentation, makes known the fact that glycerin makes alum less soluble in water and conversely that water makes alum less soluble in glycerin.

New Principle From Ergot: This time it is a base which is identical, chemically and physiologically, with para-hydroxyphenolethylamine and was isolated from the drug by Barger and Dale (*Prescriber,* through *Druggists Circular, 54,* 412).

Incompatible Mixture: A prescription calling for ammonium carbonate, 2 drams; potassium iodid, 1 dram; spirit of ether, 2 drams; chloroform water to make 6 ounces; became yellow and finally deposited a yellow sediment of iodoform. This, according to the *Pharmaceutical Journal* (through *National Druggist, 40,* 377) is due to the fact that ether in the presence of air and water converts some of the latter into hydrogen dioxid and this oxidizing agent liberates iodin from the iodid. Then the usual reaction—iodin, alcohol (in the spirit) and alkali (ammonium carbonate) produces iodoform. The reaction can be prevented by dissolving the salt in—say 4 ounces—sterilized water, making the spirit by mixing 40 minims ether with 80 minims official alcohol and then with 14 minims chlorolorm (amount in the chloroform water) adding this to the saline solution and lastly sterilized water to make 6 ounces.

Some Incompatibilities: In a paper entitled "Notes and Queries," William Duncan (*Brit. & Col. Druggist,* through *Merck's Report, 19,* 224) discusses among other matters, several prescriptions. One calls for tincture of ferric chlorid 4 drams, hexamethylenetetramine 2 drams and water to make 6 ounces. In this ammonium chlorid is formed, formaldehyd set free and ferric hydroxid precipitated.

Another calling for potassium iodid, 3 drams; potassium bromid, 2 drams; sodium sulphate, 1 ounce, spirit of nitrous ether, 4 drams; infusion of buchu to make 6 ounces, deposits crystals of potassium sulphate which are less soluble in water than in sodium sulphate and in this mixture is still less soluble because of the presence of the alcohol in the spirit of nitrous ether.

A combination of tincture of ferric chlorid, 1 dram; aromatic spirit of ammonia, 2 drams; syrup, 6 drams; and water to make 6 ounces, contains a precipitate of ferric hydroxid. By increasing the amount of syrup, the precipitation is prevented.

Book Reviews.

Refraction and Motility of the Eye, with Chapters on Color Blindness and the Field of Vision. Designed for students and practitioners. By Ellice M. Alger, M. D., Adjunct Professor of Ophthalmology at the New York Postgraduate Medical School; Ophthalmologist to the New York Dispensary; etc. With 122 illustrations. F. A. Davis Company, Philadelphia, Publishers, 1910.

In his introduction to this work the author states it is especially designed to meet the needs of the general practitioner and the embryo ophthalmologist. While this is quite correct, yet we venture the statement that the more experienced ophthalmologist will find many items of interest in it. The diction is clear, simple, forceful, readily betraying in the author the characters of a good teacher. Because of its diction one reads easily and understandingly. In the chapter on heterotropia or strabismus the value of the tropometer is clearly illustrated. This is the only time, with one exception, when the reviewer has seen this question discussed, and we feel certain that no one can read it without being convinced of the value of this method of investigating these cases, as the reviewer has been and has set forth on another occasion.

Every general practitioner should read the closing chapter upon The Relation of Functional Eye Diseases to General Medicine. This chapter is epitomized as follows: Eye-strain; its definition, objective symptoms, subjective symptoms, ocular headaches, migraine, epilepsy, choreiform movement, neurasthenia, functional disturbances of metabolism, complicating the menopause, spinal resultants, spasmodic torticollis, differential diagnosis, treatment. By a careful perusal of this chapter the practitioner may find the key to the solving and remedying of some of the vexing neuroses with which he is constantly being confronted, and may learn to apply the remedy, or at least to so advise his patients that they may seek a competent consultant's advice and thus keep out of the hands of the charlatan, jewelry store and department store opticians, and half-baked refractionists. E. L.

Hookworm Disease: Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis, and Treatment. By George Dock, A. M., M. D., Professor of the Theory and Practice of Medicine, Medical Department Tulane University of Louisiana, New Orleans, and Charles C. Bass, M. D., Instructor of Clinical Microscopy and Clinical Medicine, Medical Department Tulane University of Louisiana, New Orleans. 250 pages, royal octavo; 50 illustrations, including one colored plate. Price, $2.50. C. V. Mosby Company, St. Louis, Publishers.

It is only within the last decade that hookworm disease has had more than a purely academic interest for this country, but since the discovery by Stiles, and others, of the prevalence of the condition throughout the Southern States, from Virginia to Texas, the whole subject has assumed an extremely practical, and important aspect. In their monograph on Hookworm Disease, Dock and Bass have given a clear, concise, interesting, and eminently readable account of the condition.

They bring out very forcibly the tremendous bearing that this disease has on the economic and social conditions of the South, and, incidentally, point out the crying need for sweeping hygienic reforms thorugh the Southern States. The book is well arranged, and written in a pleasing style. The chapters on Modes of Infection, Symptomatology, Diagnosis, Prophylaxis, and Treatment are especially good. The book will be an essential to those working in infected districts and should be of real value in bringing about the early recognition and eradication of the disease. The illustrations are many and good, the type clear, and the book well made. An occasional typographical error is to be regretted, in a work otherwise so excellent. R. D.

A Textbook of Pathology by Joseph McFarland, M. D. Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia; Pathologist to the Philadelphia General Hospital and to the Medico-Chirurgical Hospital, Philadelphia; Director of the Laboratories of the Henry Phipps Institute, Philadelphia; Fellow of the College of Physicians, etc. Second Edition. Octavo of 856 pages, with 437 illustrations, a number in colors. W. B. Saunders Company, Philadelphia and London, 1910. Cloth, $5.00 net; half morocco, $6.50 net.

As one runs over the textbooks of pathology that have been placed upon the market one becomes more and more convinced that the number of such textbooks, as well as the number of students and practitioners who are to use them, might well undergo considerable reduction. The chief essentials which ought to underlie the publication of so elementary a treatise as a textbook must be are peculiarity of style and individuality of treatment of the subject matter. It must be admitted, in the beginning, that McFarland's book is not strikingly conspicuous in the possession of either essential. In this it does not differ from and is not to be censured more than the great majority of textbooks of pathology which have been written. As a matter of fact, judged by the essentials mentioned very few textbooks have an excuse for publication.

These prefatory remarks are not to be considered a criticism against McFarland's book in particular, as compared with any other. To be frank, it is above the average and the reviewer would recommend it to students in preference to a number of the texts with which he is familiar. To be commended are the use of small and large type and of plain and bold type; the treatment of diseases of the bones, joints and voluntary muscles together under the heading, "Diseases of the Motor Apparatus;"

the unusually full chapter, as compared with other textbooks of pathology, upon the diseases of the skin; and the completeness of the index. The illustrations are good; a few, apparently relics of the days of woodcuts and uncalandered paper, might as well be omitted.

The book is a second edition, having "been gone over from cover to cover" (author's preface), and it is chiefly as a revision that such unfavorable comment as must be made should be made. Among the points to be mentioned some are to be considered inconsistencies in the newer added matter. Others are statements with which one cannot entirely agree. Concerning metabolic pigmentation, one must doubt very gravely that "it occurs only in the epithelial cells in man" (p. 152). A little further along (p. 153) occurs the statement that "Pigmented tumors, for some reason not understood, are more apt to be rapidly metastatic and fatal than unpigmented tumors of the same kind." Newer cytological researches give a very acceptable explanation of the rapid growth of tumors derived from pigment cells, and the final part of the quotation is paradoxical. The reviewer cannot imagine what sort of tumors "unpigmented tumors of the same kind" could possibly be. The author has fallen into the error, so prevalent in textbooks of pathology, of considering the pigmented tumors to be ordinary sarcomata in which pigment formation is a secondary matter. This is even more evident in the more detailed discussion of melanoma on page 260. The work of Ziegler and of Marchand has had little effect if a present-day textbook still makes the statement that "Any variety of sarcoma may be thus pigmented."

It is not quite fair to the student to leave with him the impression, gained from reading pages 251 and 643, that lymphosarcoma and Hodgkin's disease are always identical. While there are points of similarity, those differences which are well established should be stated.

Neither anywhere in the text of Chapter VI nor in the index could the reviewer find mention of the increasingly important condition which has been termed status lymphaticus.

In the case of the rabbit's coccidium it is more probable that the pancreatic juice rather than "the gastric juice dissolves away the spore capsules" (p. 293).

In the discussion of amoebic infection (pp. 290 and 291) the use of italics in the words, "*Amoeba coli* rhizopoden," leads one to think that the author imagines he is using a specific term. The lamented Schaudinn was too much of a genius to have used the word "rhizopoden" as a specific zoological designation. Furthermore, one cannot quite agree with the statement that "Inoculation experiments have failed to produce dysentery in the lower animals" (p. 291). Schaudinn proved, at least to his own satisfaction, that *Entamoeba coli* is non-pathogenic for man (using himself as the object of the experiment) and that *Entamoeba histolytica* is pathogenic for young cats. The pathogenicity of the latter species for monkeys has also been shown.

The above are the more important matters to which exception may be taken. There remain the points spoken of above as "inconsistencies." In copying Fig. 125 the legend, proper for the original, does not fit the present situation. In the legend of Fig. 319 one finds "*Entamoeba hystolytica;*" elsewhere the species name, "*histolytica,*" is properly spelled. In the description of the coccidium of the mouse's kidney (p. 293) the species name, *muris,* should not be capitalized. In the legends of Figs. 148 and 149 the microgametes of the malarial parasites are still spoken of as the "flagella" of the microgametocytes. Piroplasmosis of the sheep is not "Bovine piroplasmosis" (p. 301). On page 304 the second or species name of *Trypanosoma brucei* is capitalized; elsewhere it is begun with a small letter. The Leishmania infections should not be treated under the trypanosomiases, but are just as deserving of a separate heading as the spirochaetoses. Recent work permits more definite statements conecrning the zoological position of the kala-azar parasite than occur in the description on page 306. The organism of relapsing fever is called "*Spirochaete* *obermeieri*" (p. 307); for the other members of the group the genus term "*Spirochaeta*" is used. The reviewer prefers the latter, but there should be uniformity, no matter which spelling is used. In the legend of Fig. 275 one finds "*Spirochaete pallida*", in that of Fig 276, "*Treponema pallidum*"—perhaps a small matter, but uniformity would be better.

Credit has not been given for Figs. 220, 221, 222, 223, 226, 233 and 234.

Finally, we come to something that is probably an oversight rather than a matter of inconsistency. The title found at the top of pages 291 to 331 is "Protozoan Parasites (Amoebiasis)". Only the first page treats of amoebic infection. Pages 293 to 311 deal with protozoan parasites, but not with amoebiasis. Pages 311 to 331 discuss the metazoan parasites and have nothing to do either with protozoan parasites or with amoebiasis.

It will be noted that most of the examples of lack of uniformity mentioned occur in that portion of the text which deals with the animal parasites, that is, that portion with which the writers of textbooks of pathology are least familiar. Any other textbook of pathology will show at least as great a degree of inconsistency as does McFarland's book. This brings up the point, applicable to all textbooks of pathology thus far written, as to whether it is advisable or best that a textbook of pathology should devote so much of its space as is necessary for even the most casual treatment to a discussion of general bacteriology and to a description of the animal parasites. While those who write textbooks of pathology are thoroughly competent in medical bacteriology, there are many textbooks of bacteriology which treat the subject more exhaustively and practically all medical students receive their training in bacteriology before they take up the study of pathology. In the case of the animal parasites the matter has a quite different aspect. So many books dealing with this subject are not available to the student as is the case with bacteriology. It may, therefore, be urged that the student would gain no information concerning the animal parasites were it not for the textbooks of pathology. But most of the matter dealing with animal parasites that one finds in such books is rather amateurish stuff from the zoological standpoint, and it is from the latter standpoint that the subject would be viewed. The reviewer believes that the results would be better if the student obtained his knowledge of bacteriology from a textbook of bacteriology, his information concerning parasitology from one of the three or four excellent books upon this subject which have appeared, and if the pages usually given over in textbooks of pathology to such matters were devoted to pathology. O. T. S

Genesis: A Manual for the Instruction of Children in Matters Sexual. For the Use of Parents, Teachers, Physicians and Ministers. By E. S. Talmey, M. D., Former Pathologist to the Mothers' and Babies' Hospital and Gynecologist to the Yorkville Hospital, New York. With 19 cuts, 47 drawings in the text. The Practitioners' Publishing Co., New York. Price, $1.50.

This book was inspired by the casual remark of a friend of the author whose daughter was just approaching puberty, and who declared that she did not have the necessary knowledge to properly enlighten her on matters of sex. Talmey could find no book, which dealt with these matters in a way that would serve as a simple guide for parents, and for that reason set about writing this book with that end in view. It is well written and will admirably serve the purpose for which it is intended. J. P.

Medical News.

The Council of the Cleveland Medical Library Association desires to express its appreciation of the deep loss sustained in the Association in the death of the late Dr Marcus Rosenwasser. From the very inception of the work of the library, his interest and enthusiasm have been an aid and inspiration to his associates, who will deeply miss his wisdom, counsel and endeavor. His memory will be cherished by all members of this organization as a type of an able, scholarly physician.

A joint meeting of the Cleveland Academy of Medicine and the Lorain County Medical Society was held at Avon Beach Park, August 9. A fine banquet was served at 12:30, after which Dan Millikin addressed the meeting on "The Passing of the Family Physician." R. E. Skeel, President of the State Association, very ably answered Dr Millikin and pointed out the difference between the old time and the modern physician, as well as the demands of the people. Dr Skeel is wide awake to the needs of the profession in Ohio and promises to make one of the best Presidents the Association has ever had. His remedy for regaining the confidence of the people and for doing away with the various fads such as Christian Science, Osteopathy, etc., which have successfully secured special laws in various states so that they could practise, as well as for combatting the association of independent physicians who are flooding the country with their literature, is educating the people by lectures, literature and other means, as to just what the medical profession is really doing for the people and their object in so doing. When the absurdity of these various fakes is pointed out to them then they will not vote for such laws. If the irregulars wish to practise some special branch of therapeutics, they should first be compelled to take the regular medical course. The medical profession must be up and doing to educate the people and thereby to counteract the influence which these various fads, all of which are well organized, have had on the people. Education is the only remedy: this could be begun by the medical school inspectors who could show up these various fakes in their true light and on the other hand point out what the medical profession has done and is still doing for the public at large.

P. F. Southwick, Sandusky, recently took a ten days' motor trip through Ohio and Indiana.

Carrie Chase Davis, Sandusky, one of the most progressive and highly respected members of the medical profession of Sandusky, as well as one of the best Secretaries the Erie County Medical Society has ever had, after practising in Sandusky for 11 years has sold her residence and gone to Washington, D. C., to accept a very flattering offer to practise with one of the leading woman physicians of that city. It is with great regret that the citizens as well as the profession of Sandusky see her leave. She was not only energetic in her professional work but very active in the interests of the city, through the women's clubs, etc. We wish her success in her new field.

Wm. Storey, Chas. Graefe and H. D. Peterson, Sandusky, attended the joint meeting of the Cleveland Academy of Medicine and the Lorain County Medical Society held at Avon Beach Park, Aug. 9.

At the Muskingum County Medical Society's August Meeting, D. J. Mathews, Zanesville, read a paper upon Cholelithiasis. The rest of the evening was taken up with the discussion of the paper. The following resolution was also adopted:

Whereas, We, The Muskingum County Medical Society, deem it inadvisable and harmful to in any way modify or change the present Medical Practice Act; therefore, be it

Resolved, That we unanimously request our successful candidates for the State Legislature, that they oppose any movement to in any way interfere with existing laws.

This resolution was passed and copies of it sent to each candidate for the State Legislature, in order that they might know how the physicians of the county stand.

James Donnelly, of Toledo, has been ill with typhoid fever.

Homer H. Heath and family, Toledo, spent a part of July touring through New York State.

C. D. Selby, Toledo, spent his vacation in Stratford, Ontario.

P. I. Mulholland, Toledo, returned August 17 from a ten days' fishing trip on the Au Sable river.

H. W. H. Nelles, Toledo, motored into Canada, his former home, the early part of August.

C. N. Smith, Toledo, took a trip into northern Michigan for his summer vacation.

The Toledo State Hospital gave its 800 patients their annual outing at the Casino, Toledo, August 12.

Toledo doctors collide: August 15, Granville M. Wright and L. W. Briggs, each driving his machine, met in collision, Dr Briggs being thrown against a mail-box post and severely injured.

The staff of the Elyria Memorial Hospital held the regular monthly meeting August 15. Geo. D. Nicholas gave a paper upon Traumatic Injuries to the Head and O. T. Maynard presented one upon Septicemia.

Wayne P. Mecklem has been apponited a resident at the Mansfield Reformatory to succeed J. Byrd, resigned.

J. B. Hall is moving to Toledo and will practise there.

M. Y. Davis and Mrs. Davis visited in Chicago recently.

A. L. Scherick, of Ashland, recently spent a couple of weeks with the Mayo Bros. at Rochester, Minn.

The Ashtabula County Medical Society held its fifty-fifth regular meeting at the Lake Shore Club, Aug. 2. A banquet was served at the Club followed by a smoker and general discussion.

Geo. C. Jameson, of Oberlin, recently spent some time in special postgraduate work at the University of Pennsylvania.

The American Association of Clinical Research will hold its second annual meeting in Boston on September 28 and 29, 1910. Some very valuable contributions on researches in medicine and surgery, in prophylactic and anaphylactic medicine, in mental medicine, in radiotherapeutics, in metabolism, etc., are promised. There will also be a public meeting.

At the recent meeting of the Congress of American Physicians and Surgeons held in Washington in May, 1910, a joint session of the American Orthopedic and American Pediatric Societies was held and the subject of epidemic poliomyelitis was discussed. The following resolution was adopted:

"It having been shown by recent epidemics and investigations connected with the same that epidemic infantile spinal paralysis is an infectious communicable disease that has a mortality of from 5 to 20%, and that 75% or more of the patients surviving are permanently crippled, State boards of health and other health authorities are urged to adopt the same or similar measures as are already adopted and enforced in Massachusetts for ascertaining the modes of origin and manner of distribution of the disease with a view of controlling and limiting the spread of so serious an affection."

A committee with Robert W. Lovett, President, Boston, Mass., Irving M. Snow, Secretary, Buffalo, N. Y., was appointed to urge the various State and municipal health authorities to take up the work of investigation of the various foci of epidemic poliomyelitis, to study its epidemiology and to instruct the public that the disease is at least mildly communicable.

The United States Civil Service Commission announces an examination on October 5, 1910, to secure eligibles from which to make certification to fill a vacancy in the position of medical interne, Government Hospital for the Insane, Washington, D. C., at $600 per annum, with maintenance, and vacancies requiring similar qualifications as they may occur in that hospital, unless it shall be decided in the interest of the service to fill the vacancy by reinstatement, transfer or promotion. Applicants should at once apply to the United States Civil Service Commission, Washington, D. C., for application form 1312.

Deaths.

Jesse S. Reagan, Lebanon, Ohio, died February 9, aged 62.
Charles E. Shumard, Venice, Ohio, died August 2, aged 48.
Gustave Aftel, Toledo, Ohio, died August 5, aged 60.
John H. Whitehead, Bowling Green, Ohio, died August 6, aged 69.
John J. Brower, Coshocton, Ohio, died July 30, aged 71.
Guy C. Kinnaman, Ashland, died August 29, aged 32.
Daniel Watt, Somerton, Ohio, died August 23, aged 40.
Darwin G. Palmer, Geneva, Ohio, died August 27, aged 68.
William C. Stout, Killbuck, Ohio, died August 19.
David D. Bramble, Avondale, Ohio, died September 2, aged 70.
Alfred H. Iddings, Dayton, Ohio, died August 20, aged 70.
Harrison McFadden, Magnetic Springs, O., died August 31, aged 70.
Marion D. Ditzler, Lewiston, Ohio, died August 31, aged 56.
Henley C. Rutter, Columbus, Ohio, died September 17, aged 61.
Marcus Rosenwasser, Cleveland, Ohio, died September 4, aged 64.

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Senescence and Natural Death.

By WILLIAM TRAVIS HOWARD, M. D., Prof. of Pathology,
Western Reserve University, Cleveland.

It is my purpose to address you tonight on certain aspects of senescence and natural death, from the general zoological, rather than from the strictly medical viewpoint. I desire to present to you, in as broad and clear a light as possible, in the comparatively short time at my disposal, the main facts relating to these subjects that have been observed and collected by certain naturalists and the deductions that have been drawn therefrom. It seems the more important that they should be set forth to medical men at the present time when so much that is clearly erroneous and inadequate is being written on these subjects by laymen, physicians and even naturalists.

At the start, I must disclaim any pretense to originality in this field, though some recent work done in my laboratory by Drs Schultz, Dolley, Marine and myself serves, as will appear later, to uphold and, perhaps, even to extend, some of the doctrines that have been formulated by those experimental zoologists who have busied themselves with these questions.

Widespread popular interest has been aroused in recent years in old age and natural death by Metchnikoff's two books, "The Nature of Man" and "The Prolongation of Life." These with Haeckel's "The Wonders of Life" and "The Riddle of the Universe," should be read by every educated person, for they contain many interesting facts and valuable speculations concerning life and death. Metchnikoff's two principal theories regarding the cause of senescence and natural death will not, however, stand the test of critical analysis. The writings of Maupas, R. Hertwig, Calkins and Minot, based upon experimental investigations,

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Read before the Experimental Medicine Section of the Academy of Medicine of Cleveland, April 8, 1910.

present the most recent and fundamental conceptions of senescence and natural death.

R. Hertwig's ideas are well and simply presented in his popular lecture "Die Ursache des Todes." Calkins gives an interesting and valuable exposition of the subject in his recent textbook on protozoology. Minot's Lowell Lectures for 1907 on "Age, Growth and Death" may be read with pleasure and profit.

It is deeply significant of the era that we are approaching, that three experimental zoologists of the standing and breadth of view of Hertwig, Metchnikoff and Minot should present their ideas of the meaning and interpretation of old age and death in popular form.

Properly to study senescence and natural death, it is essential to get away from the medical view that these processes are necessarily connected with disease. They may be hastened and modified, it is true, in various ways by poisons, accidents and other causes of disease; but, as will be shown later, they form an integral, essential and inherent part and phase of that type of existence called life.

The oft quoted senescent, and, let us hope, soon-to-die aphorism of Cazalis, "A man is as old as his arteries," is only partly true and that in the medical sense. This saying is too commonly applied to the young with marked arterial disease, perhaps localized in one organ, due to extraneous causes and developed to a degree incompatible with life, while the rest of the body is young, vigorous and in perfect condition. Individuals die, it is true, of their arterial disease who, but for a chance affection of a single vessel might live to old age. Arterial disease may bring death at almost any age, but it is not an essential and inherent part or lesion of senescence and natural death. Many senescents die of natural death with healthy arteries, and senescence and natural death occur in animals without a vascular system.

It is necessary, therefore, that the terms senescence and natural death be considered in their proper meanings. By senescence, in the sense in which it is here used, is meant the process of growing old, or, more fully expressed, the series of states passed through by a living being, whether a single call or a multicellular organism, in its progress through youth and adulthood into old age. Natural death is the type of death that supervenes upon the wear and tear, the strain and stress of life; it is due to the exhaustion of cell activities, and occurs independent of accident, infection and ordinary poisons and injuries. It is the culmination of the processes that go to make up the cycle of what we call life.

There is a wide variation in the duration of life in the animal species, and this variation in the vertebrates, at least, bears no relation to size. Man may live to 150 years and over. There are many instances of centenarians with well preserved mental and physical faculties. Man should evidently live to a much greater age than is usual.

Contrary to the general belief centenarians are not rare. In France in 1836, there was one centenarian to each 220,000 inhabitants. According to Orustein (1891) in Greece there is one to every 25,641 inhabitants. Among the larger mammals, the life span of the elephant is about the same as that of man. For the horse 50 years is about the extreme limit; for cattle 20 years is unusual. Dogs seldom live more than 18 years; cats do not live so long as dogs; and rabbits seldom surpass five years. The drain of reproduction in the human race, at least, plays no part in shortening the duration of life, for here a larger proportion of women than of men reach extreme age.

Among the lower vertebrates, many birds such as eagles, ravens and parrots, live to an extreme age. Salmon and pike, among the fish, may live over 100 years. There are good reasons for believing that one pike lived 267 years. Eels may live 60 years and some molluscs 100 years. Longevity among turtles is proverbial. While old age is not common among insects, some may live 17 years. The queen bee is said to live from three to five years, while the drones last less than a year. Sea anemonies may attain a great age—in one authentic case 66 years.

In general, it may be said, that the lower vertebrates live as long as, or even longer than, man. Senescence and natural death occur very commonly in the plant world but here there is great variability in the duration of life. Some trees live to a great age —hundreds or even thousands of years. The annuals live but a few months and in them natural death occurs with the production of seed. Life in them may be prolonged considerably by cutting back the buds. Some lower plants live but a few hours and perish after the development of the sex organs.

It is unnecessary to rehearse to this audience the clinical picture of old age in man and the domestic animals. The pathological anatomy of old age in mammals is fairly constant. You are all familiar with the bending of the body and the fixation of various joints of the body skeleton, the loss and paling of the hair, the shrinkage of the subcutaneous fat and fibrous tissue, the atrophy and sclerosis of the principal viscera attended by loss of the important parenchymatous or "noble" cells and the overgrowth of the less highly differentiated connective and glia tissues. Often the arteries lose in elasticity and contractile power in consequence of degeneration and atrophy of muscle and elastic tissue, and hence the dilatation and tortuosity of these vessels so frequently present in old age. In the female the generative organs atrophy and ova cease to ripen. In the male, on the other hand, spermatozoa are formed in abundance in advanced age. The degeneration, atrophy and disappearance of the nerve cells. especially in the brain of the higher mammals, as well as in bees in old age, are facts of great significance.

Certain of our body cells are destined to but a short existence. Striking examples of this are red and white blood cells. and the epidermic cells, all of which undergo a process often called necrobiosis. The epidermis is constantly dying at the surface and renewing itself at the base by proliferation of the basal cells, most of whose daughter cells differentiate, gradually make their way to the surface and, undergoing various changes, become horny and are cast off. So with the nails and the hair, which are being renewed from the roots continually.

In the rapid multiplication of the cells of the developing thymus, as Marcus has shown, many of the cells degenerate and die out. It is a well established fact that the lower orders of animals often living for varied periods of time, die of old age.

It is now known that the protozoa, instead of being immortal as was once thought, die of senescence. Butschli, Wiessmann and others long ago pointed out that in considering the duration of life of protozoa account is to be taken not of the life of a single organism, but of the whole successive number of cells between two periods of conjugation. The more recent work of Maupas. Calkins, R. Hertwig and Schaudinn has placed this conception on a firm basis, and enables us to conceive of the whole succession of protozoan cells between two periods of conjugation as comparable with the more or less permanently bound together cell groups which we call metozoa. In the latter the somatic cells wear out in time and new and fresh individuals spring from the sex cells. The researches during the last few years of Maupas, Calkins, R. Hertwig and their pupils have established the fact that certain protozoa when cultivated in the laboratory for long periods of time and through numerous generations finally die out. The history of such a culture is marked by periods of active feeding and rapid growth and multiplication, succeeded by irregular periods of sluggishness, and failure to feed and to multiply. In these latter periods which have been called by Calkins periods of "depression" and by R. Hertwig "physiological degeneration," many of the animals die, and, finally, unless certain phenomena of rejuvenescence (Maupas) or of regulation (R. Hertwig) occur, and sometimes even in spite of these, the culture will die out.

These periods of depression are characterized by very definite morphological changes in the protozoan cells. As R. Hertwig first showed, the cytoplasm becomes denser, cloudy or granular, or even vacuolated and pigmented. In forms with pseudopodia the latter may become thickened, retracted, twisted or even lost. Portions of the cytoplasm may die and be thrown off, or the whole cell may die. R. Hertwig, in his experiments on physiological degeneration of protozoa, found that the periods of depression are characterized further by a marked overgrowth of the nucleus with the result that there is a marked change in the nucleus-plasma relation in favor of the nucleus.

This is shown not only by nuclear hypertrophy, often with the production of giant nuclei and hyperchromatism, but in multinuclear organisms also by nuclear hyperplasia, or a marked increase of the number of nuclei. In physiological degeneration or depression the nucleus may, and often does, undergo a variety of degenerative changes, such as vacuolization, hyaline change, rupture, and disintegration.

In protozoa with a sexual or micronucleus as well as a vegetative or macronucleus, as in *Paramaecium,* for instance, Maupas and Calkins have both described, in the end stages of physiological degeneration, definite degenerative changes in the former, thus showing that after repeated depression the whole structure of the organism may be profoundly modified and undergo retrogressive changes.

The theories that have been advanced to explain the occurrence of senescence and natural death fall, generally speaking, into two categories.

In the first, senescence and natural are due to causes which are extraneous and lie outside the affected cells. In the second, the causes are intrinsic in the affected cells, and senescence and natural death to which the former leads, are part and parcel of life itself.

According to the first conception, the organism grows old and finally dies because some or all of its most important structures whose integrity is essential to life, are injured by causes independent of themselves, but yet causes which strictly speaking are not to be classed among the infections, accidents and ordinary intoxications.

Some of these theories are too fanciful to merit discussion. The most recent and plausibly supported theory of this category is that of Metchnikoff, which has been so elaborately set forth with such a wealth of illustration, that it is well worth while to examine it. Ignoring the recent work of the experimental zoologists upon senescence and natural death in protozoa, he accepts the old doctrine that these animals are immortal and confines his investigations, as far as animals are concerned, to explaining these phenomena in man and in the higher animals. For him senescence and, by implication, natural death are brought about by two sets of causes, first auto-intoxication, due chiefly to the absorption of toxic substances from the large intestine, and secondly to the destruction of the parenchymatous or "noble" cells of important organs such as the brain, the liver, the kidney, the muscles, etc., by less highly developed and specialized cells of the supporting tissues, such as glia and connective tissue cells—the macrophages.

Having established that the lower vertebrates on the whole live longer than the higher, and seeking an explanation to fit this as well as for the variation in longevity among the higher mammals, including man, he finds, as a common trait, that animals with long and large intestines have a shorter life duration, and go into senescence earlier than those whose cecum and colon are short. For instance, most fish, long lived reptiles and birds such as parrots, ravens, eagles, and birds of prey in general, have a rudimentary large intestine which contains and retains but a small mass of excrement, while in man and many higher animals, especially cattle, horses, sheep, dogs and rodents in general, the large intestine is capacious and retains a large amount of fecal material, rich in the bacteria of putrefaction. In carrion eating birds, with their short large intestine, the feces contain only a small number of bacteria, and the intestinal contents have no odor of putrefaction,—in marked contrast to all animals with large intestines of large dimensions. It being an established fact that bacteria and their toxins may, under certain conditions, make their way through the large intestine into the system, Metchnikoff sees in this an important cause of injury to the higher cells of the body which leads to senescence. His introduction of lactic acid producing bacilli into therapy is a consequence of this idea. He seeks to substitute in the cecum and colon these harmless and "good" bacteria for harmful, putrefaction causing species.

To his second factor in the cause of senescence, the activity of the macrophages in destroying the "noble" cells of the tissues, Metchnikoff attributes a very important rôle. The atrophic senile processes in general, including those of the kidneys, liver, striated muscle, intestines, skin and even of the brain in old persons and animals, he thinks are due to the destructive activity of these cells. The macrophages first invade the tissues and destroy the highly specialized or parenchymatous cells, such as brain cells and renal epithelial cells, for instance, and later grow out into connective tissue cells. Paling of the hair and baldness, according to him, are also brought about by the same agency. For instance, in graying of the hair, the pigment is removed by macrophages—pigmentophages—which enter the hair, absorb the pigment and carry it away. The common macrophage of Metchnikoff, to which he attributes most of these activities, is a rather large cell with a single nucleus that occurs either as a white corpuscle of the blood, lymph and exudations, or as a fixed cell of the connective tissues, the spleen and lymph glands. But in special tissues, special cells may act. In atrophy of striated muscle, the muscle nuclei first proliferate, then the sacroplasm about the muscle grows, destroys and finally replaces the muscle tissue.

The first part of Metchnikoff's theory has no bearing upon the subject under discussion. That the products of intestinal putrefaction often cause poisoning and, in some cases at least, perhaps serious damage to parenchymatous cells, few will deny. Such lesions, however, do not come within the pale of natural senescence as we have defined it, and cannot be considered as factors in the production of physiological death. The second part of his theory—that phagocytes have any such action as is attributed by him to his macrophages—has aroused severe criticism as not being in accord with the correct interpretation of the processes described. There seems to be no reason to doubt that he has here put the cart before the horse—that the macrophages are attracted by dead and dying cells, in the removal of which they may play a part.

The sclerosis of the atrophying organs of old age, involves the well established observation of the passive replacement rather than the active destruction of the worn out and dead parenchymatous cells by the proliferation of supporting tissues.

In favor of the second theory that senescence and natural death are due to causes inherent in the cells themselves, there is much to be said. Many experimental zoologists and botanists hold the view expressed in various ways that senescence and natural death are due to exhaustion of the vital processes of the cells. And this conception applies to unicellular as well as to multicellular organisms.

In the earlier days of experimental zoology, when the protozoa were thought, like the sex cells of the metazoa, to possess a continuity of life, or immortality, Weissmann concluded that natural death, due to the action of causes inherent in the organism, is a new acquisition on the part of the multicellular organisms; for in these through differentiation the cells are divided into two classes, the somatic and the propagatory. In this separation the somatic cells have, after repeated division, lost the power of continuous life, while the propagatory cells—the sex cells—have retained this quality. After young have been produced and provided for, the individual may perish without injury to the species. But it is now known that protozoa, which in the single cell possess both somatic and propagatory qualities, may also perish from senescence and are the subjects of natural death.

Experimental zoologists have shown that "the life process carries in itself the germ of death, that the organism in the course of its existence gradually uses itself up, must be replaced by new, young individuals, or else must undergo in itself a transformation or rejuvenescence."

Maupas concluded from his culture experiments upon protozoa that the life energy of those animals is to be measured by the number of generations produced and that after a time the individuals die of senile degeneration and the species must perish unless the individuals rejuvenate themselves by a renewal of the nuclear apparatus. This is accomplished by conjugation which takes place when the organisms are sexually ripe. In the protozoa, therefore, after a variable number of generations, which vary for different species and for the same species under varied conditions, the capacity for growth and division, as well as for important metabolic functions, wears out and the animals finally die unless conjugation takes place. The periodic depressions and recoveries therefrom mark different stages on the road in the life cycle of protozoa between the two conjugation periods, between the interval of perfect health and strength and the final stage of exhaustion, beyond which the cell generation cannot go without the rejuvenating effect of a conjugation. While Maupas is correct in his claim that conjugation is necessary for the continued life of a race of protozoa, there are various means by which depressed protozoa may recover from depression and feed and multiply for a number of generations. For instance, Calkins has shown that in *Paramaecium* an otherwise fatal depression may be recovered from and the life period of the culture greatly prolonged by the addition of various salts, beef broth and extracts of brain and pancreas to the cultures.

R. Hertwig noticed in cultures of *Actinosphaerium* which had been thrown into marked depression by continuous overfeeding, and in which the nuclear material was greatly increased, that recovery from depression was marked by the destruction and extrusion of nuclear material. In this animal the excessive nuclear material in recovery from depression is got rid of by fusion, resorption and extrusion of nuclei and by chromidiosis—or the extrusion of chromatic material from the nuclei into the cytoplasm where it is destroyed and extruded. After nuclear reduction accomplished by these means the animals, having recovered from depression, resume active feeding and multiplication for a time, when the depression again ensues, again to be recovered from by the same means. Finally, however, in these overfed cultures the life energy of the cells wears out, and as the animals can not destroy enough nuclear material to allow normal encystment and consequent conjugation, the culture dies out from physiological degeneration, after having shown every evidence of senility.

R. Hertwig ascribes an important rôle to encystment and maturation in protozoa in avoidance of and in recovery from depression. The value of the first is that it puts a stop to functional activity and thus prevents the organism from wearing itself out. In the latter superabundant nuclear material is got rid of. All workers in experimental zoology may be said to agree that fertilization is the final and supreme remedy. R. Hertwig regards amphimixis, or the union of the nuclear material of the two copulating cells, with the resulting reorganization of the nuclear and cytoplasmic materials as the essentially important factor in fertilization.

Not only after the rapidly repeated cell division in active growth, but in consequence of increased functional activity, the nuclear material increases at the expense of the cytoplasm. Hertwig sees in this one of the greatest dangers to the cell and holds that, if the cell is to remain capable of function, this functional increase of the nuclear material must recede—through a process of resorption. In the protozoa, at least, after prolonged functional activity the functional overgrowth of the nucleus preponderates over the resorption processes, resulting in a condition of nuclear hypertrophy, a disturbance in the nucleus-plasma relation in which effective functional activity is impossible and the cell is in profound depression.

Unless the excessive nuclear material is reduced or the action of some other regulatory process intervenes, death ensues from natural causes—physiological death. The metazoa, unlike the protozoa, are unprovided with contrivances for permanent and complete restoration and rejuvenation, and, by a sort of physiological usury, use up the initial energy of their important cells; and like protozoa withheld from encystment and fertilization, grow old and undergo physiological death. According to R. Hertwig this physiological usury in the metazoa does not, early in life, reach the grade which characterizes depression in protozoa. The sex cells, on the other hand, which are but little under the influence of the soma, owe their immortality to their freedom from functional activity—to functional rest. Stated in other terms, it may be said that so far the germ cells are the only cells that have attained the capacity of living without using up their life energy, and they are able to accomplish this because they expend relatively little energy upon functional activity. Being parasites, they live at the expense of their hosts to whom they make no immediate or direct return.

Minot's views, with certain differences in the interpretation of the observed facts, are very close to those above set forth. Having established the facts that during the embryological period growth is at its maximum and that an animal at birth has used up all except a relatively small percentage of its growth energy, he holds that the life energy of the body cells after birth is expended in cellular differentiation, or cytomorphosis as he terms it, and that it is progressive cytomorphosis that leads to natural death. The sex cells, according to his view, stay young and escape old age because they do not undergo differentiation.

As rapidly dividing cells, such as those of the segmenting ovum and those of growing embryological tissues have, on the whole, relatively larger nuclei than the cells of fully differentiated tissues, Minot regards large nuclei as a mark of youth and energy in cells.

According to the view of R. Hertwig and his pupils marked increase in the size of cell nuclei is a sign of depression. Protozoa, thymus cells, sex cells and various other cells, when in depression, commonly possess a strikingly increased amount of nuclear material. This difference in the interpretation of observed facts, is, it seems to me, very readily reconciled. Not only protozoa after rapid growth and division as well as in excessive functional activity from overfeeding, but after starvation or when submitted to cold, but rapidly growing cells in general show an upset of the nucleus-plasma relation in favor of the nucleus.

Thus not only in sex cells and thymus cells, but as Dr Schultz and I have shown, in the cells of many rapidly growing tumors, there is often a marked increase of the size of the nuclei which, unless relieved by some form of cell regulation leads to depression and cell death. Dr Marine has found that in some cases of thyroid hyperplasia in which for a long period of time the thyroid cells have been in active growth and multiplication and presumably in hyperfunction, many of the cells show nuclear hypertrophy and hyperchromatism and perish from depression or physiological death. Individuals with such thyroids often have cretinism or myxedema, which may, I think, be attributed to the loss of functional activity on the part of the depressed thyroid cells.

We must recognize with Hertwig a growth and a functional increase in the size and content of the nucleus. In rapidly growing cells, with a minimum amount of functional (secretory) activity the nucleus grows more rapidly than the cytoplasm and according to R. Hertwig, it is this individual growth of the nucleus which creates the nucleus-plasma tension which results in division. This is the type of nuclear enlargement that Minot is dealing with in the cells he uses to illustrate his idea. It is the functional overgrowth of the nucleus to which R. Hertwig alludes when he connects this with exhaustion of cellular energy in depressed cells.

Cellular differentiation is to be regarded, it seems to me, as the morphological evidence of functional capacity and as such is a part of growth. In the somatic cells of the metazoan organism that has attained its normal growth, it is not the using up of life energy in growth in size and differentiation, but its final exhaustion in prolonged functional activity that plays the greatest and most important rôle in causing senescence and physiological death.

In nerve cells, as has been shown by Hodge, Dolley and others, in functional activity after stimulation, the nuclear material at first is increased in amount, and then after fatigue sets in, just as happens in gland cells, the nuclear material decreases in amount far below that present in the resting cell. Dolley has recently demonstrated that when the nerve cell is stimulated to exhaustion it loses all its nuclear material and the cytoplasm shows various retrogressive changes.

Thus we have produced in the nerve cell exhausted by overfunctional activity lasting for a comparatively short time, the same morphological changes presented by the same type of cell in old age, where the life energy is gradually worn out by prolonged functional activity without means of restoration and rejuvenation. Dr Schultz, at the last meeting of this Section, in describing the life history of the dermic chromatophore, pointed out that many of these cells in his material died in depression following excessive functional activity. The same rule applies, I doubt not, to all the highly differentiated cells of the metazoan organism.

Nuclear hypertrophy, hyperplasia and hyperchromatism are without doubt indications and characteristics of depression in rapidly growing and multiplying cells—division growth of the nucleus,—and of functional activity and growth in certain cases; but hyponucleosis, or atrophy and hypochromatism of the nucleus, is clearly an important feature of the metazoan cell dead and dying as the result of prolonged functional activity.

And yet another set of natural causes for senescence and physiological death of cells presents itself for consideration.

Lactic acid bacteria and yeasts when grown in culture secrete substances which inhibit their growth, cause degeneration and finally death of the cells. As certain flowering plants die out as soon as the seeds are produced, Metchnikoff has suggested that the cells of the flowers secrete some poison capable of killing the rest of the plant. It is well known that the somatic cells of many of the higher animals secrete enzymes capable, under certain conditions, of destroying not only foreign cells and other cells of the organism, but the very cells making the ferment. Leukocytes secrete proteolytic enzymes capable of digesting fibrin and even other cells. The liver cells when removed from the body and kept under aseptic conditions digest themselves—a process known as autolysis. It is likely that the cells of the metazoan body are protected normally from the action of such ferments through the mediation of antiferments and other antibodies. There is evidence that these protective agencies are sometimes broken down, or for some reason or other inhibited in their action, resulting in extensive cell death. The rapid and extensive destruction of liver cells in acute yellow atrophy of the liver is probably a case in point. Perhaps, then, one at least of the causes of senescence and consequently of natural death is the wearing out on the part of certain cells of their capacity to produce suitable antibodies to protect themselves from auto and other ferments.

This explanation would apply as well to the physiological degeneration and death of protozoa, tumor cells, thymus, leukocytes and sex cells as to the specially differentiated somatic cells such as nerve, muscle, liver and renal cells.

Sacro-Iliac Strains.

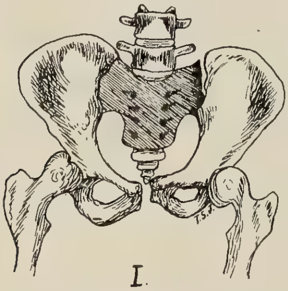
By GORDON N. MORRILL, M. D., Cleveland.

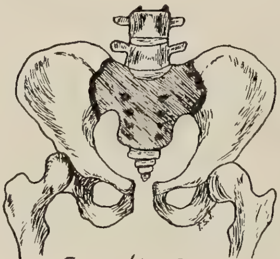
In order that we may more readily understand the many factors that enter into the strains and weakness of the sacro-iliac joints, a consideration of the mechanical features is essential.

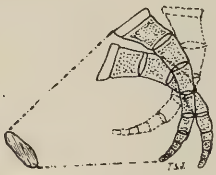
The pelvis is composed of three bones, the two innominates and the sacrum, and between each is a joint, possessing all the structural elements peculiar to a joint. Between the innominates in front we have the pubic articulation, in which joint at times there is marked movement; a fact well known, especially to the obstetricians. These movements are a sliding up and down of either side (Fig. 1) or a separation of the pubic bone (Fig. 2); and of course any motion of either side of the symphysis pubis must have a corresponding movement in the sacro-iliac joint of the same side. At the back of the pelvis are the two sacro-iliac joints, which permit of considerable motion of the sacrum under normal conditions.

As one of the above joints is vertical and the other two oblique from a mechanical point of view, they are naturally unstable; and their stability must depend upon the tone of the ligaments and muscles more than is the case with any of the other joints in the body.

The surfaces of the sacro-iliac joint are irregular and more or less studded with nodules, the interlocking of which markedly increases their stability. The motion of the sacrum is upon a horizontal axis situated at about the middle of the sacro-iliac joints, which permits the top of the sacrum to rock forwards or backwards at the same time that the lower portion travels in the opposite direction. If it were not for this rocking motion of the sacrum, on which the widening of the bony birth canal depends, symphysiotomy and pubiotomy, as well as Cesarean section, would be much more frequent than at the present time. Because if the sacrum is pressed backwards at the top, the anteroposterior diameter of the inlet of the pelvis is made larger and the outlet smaller. While if the lower portion is pressed backwards the inlet is diminished and the anteroposterior diameter of the outlet is increased (Fig. 3).

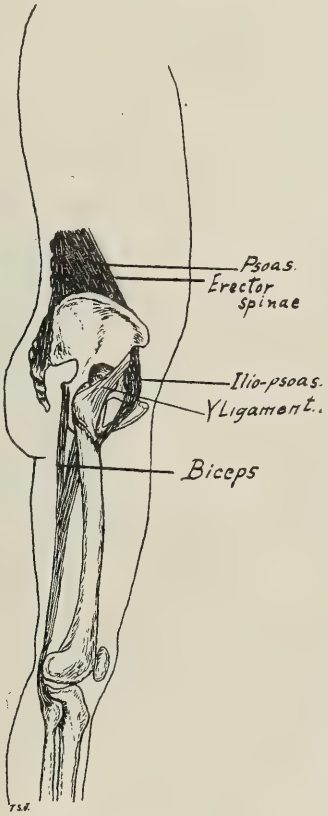

I.
Left raised.


Separation Symphysis.
II

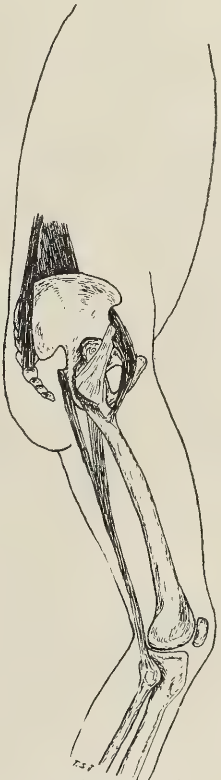

III.

Now, as the sacrum is wedge shaped, the superincumbent weight of the body may cause more or less mechanical strain on the sacro-iliac joints according to the angle at which the sacrum is placed. Therefore as the sacro-iliac joints are held together by ligaments as well as by muscular tension, it will be easily understood that, should the body weight be so applied that constant muscular effort is required to keep the joints within their normal range of motion, it would only depend upon the muscular development of an individual, as to when those muscles would tire and throw the stability of the joints upon the ligaments—which eventually stretching would allow the joints a wider range of motion.

Directly anterior to the sacro-iliac joint we find the lumbo-sacral cord and sacral plexus. Any irritation of these is naturally felt by the patient as pain, or muscular contractions or cramps, depending on whether the sensory or motor nerves are irritated. On account of the close approximation of these nerves to the sacro-iliac joint, any inflammation or increased motion of the joints may easily cause nerve irritation by exerting pressure on them.



IV.
Normal posture.



Lordosis lost.
V.

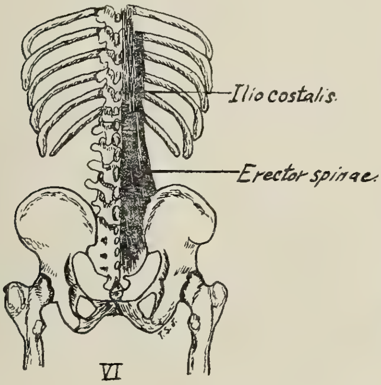
When the body is held properly in the erect position, there should be a certain equalizing and counterbalancing of muscular action. Now, if for any reason malpositions are assumed for long periods they naturally tend to strain certain groups of muscles. A good example of this will be found in what is called "miners-back;" due to the men having to work all day stooping over. In these cases the erector spinae muscles are so stretched and weakened, that it is with considerable pain that they are made to contract again in assuming an upright position. The working man's cure for this is to put the handle of a shovel or pick across the small of the back, and then placing his arm behind it, so that the implement falls within the hollows of the elbows, to bring his arms forward; thus straightening up and obtaining the normal lordosis that he has been without all day and relieving the strain on the overstretched erector spinae.

Normally in the erect position the sacrum is tilted forward at the top between 20° and 25°; this is usually most marked in women (Fig. 4). Now, if for any reason it becomes more perpendicular it acts on account of its shape more as a mechanical wedge and necessitates more than the normal amount of muscular action to keep it in place. Thus we find that those patients, who lack the normal amount of lordosis in the lumbar region, habitually stand with the entire pelvis tilted backwards; so that the symphysis pubis may be on a level with the top of the sacrum; this of course makes the sacrum more or less perpendicular (Fig. 5). In these cases we usually see considerable spasm of the erector spinae, and when standing at ease we find the thighs and knees flexed.

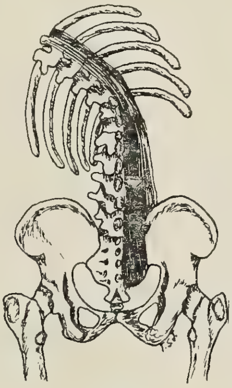
As the erector spinae muscles are attached to the ilia as well as the sacrum, they tend on contraction to tilt the pubis downward and also to hold the sacro-iliac joints together. The flexion of the thighs will often be found to be really due to the flexion of the pelvis on the body, as the Y ligament of Bigelow keeps the femur in the normal position as regards its relations with the pelvis. This position of the pelvis and thighs loosens the psoas and iliacus which under normal conditions are aided by the Y ligament of Bigelow in causing and maintaining the normal lordosis. The flexion at the knees tends to loosen those hamstrings which arise from the tuberosities of the ischia and on contraction tilt the pubis upwards.

The usual luxation of the sacrum is backward at the top generally of one side only, although both sides may be affected and displaced either backwards or forwards. In the backward displacements we usually find the thighs and knees flexed with the hamstrings and erector spinae muscles taut. This position allows the loss of the normal lordosis and throws the body weight further back on the sacrum. Also, usually, that portion only of the erector spinae which is attached to the secrum is contracted (Fig. 6). In this way nature tries to force the sacrum forward and the contracted hamstrings pull the ilia backward.

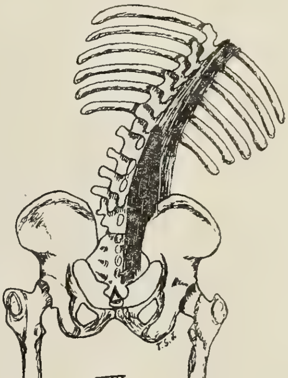
In a greater number of the acute strains of the sacro-iliac joints only one side is affected, and by pressure one can generally tell which it is. The motions of the body are more or less guarded depending on the severity of the case, especially those motions that bring any strain on the injured joint. Thus we find that in forward bending, the patient will lean slightly towards the opposite side, thus removing any strain from the injured side, and that lateral bending is also restricted in the lower portion of the spine in leaning towards the well side (Fig. 7); while towards the injured side it is included in the general curve (Fig. 8.) This is caused by the spasm of the erector spinae muscles on the affected side. In backward bending the entire trunk is often held rigid and it may be impossible for the patient to regain an upright position.



VI



VII



VIII

Often in severe cases the greater part of the body weight is thrown upon the sound side and we may find a marked curve in the lower spine, with perhaps a compensatory one higher up; caused by the tilting of the pelvis laterally to relieve the injured joint. In these cases the hip on the affected side is the more prominent, and the leg seems longer, the patient standing with the knee bent.

With the normal individual it is possible, with the patient either seated or lying down with the knee extended, to raise the leg to a right angle; but in sacro-iliac injuries this motion is limited on the affected side.

The most common causes for acute strains are in rising suddenly from a stooping position while lifting a heavy object, or in suddenly putting the entire weight on one leg before the muscles holding the sacro-iliac joints have had time to contract; as in stepping into a hole or slipping when lifting anything. In these cases there may be a partial dislocation which may or may not reduce itself. With the female this is much more apt to occur during their monthly periods, as at these times the sacro-iliac joints naturally loosen. During their periods many women have more or less backache and perhaps sciatica; considering the pain to be one of the many disadvantages that, being women, they have to stand. This periodical backache seems to me to be unnecessary to a great extent, as I have never seen a case that was not markedly benefited by proper treatment. These joints account for the sciatica that is so often noticed in pregnant women and a great improvement usually follows the application of a properly fitting apparatus which holds the joints together and yet does not press upon the abdominal wall.

Most chronic cases are due to unreduced dislocations or to a bad poise of the body either natural to the individual or assumed. Good examples of the latter being found in severe cases of painful flatfoot.

In the acute cases an adhesive plaster strapping is applied to the back, to hold the joints together until a properly fitting belt can be made. This is done to rest the muscles and aid in their regaining their normal strength. Later on certain exercises are necessary. If in the severe cases the treatment does not relieve the patient, the joint should be carefully manipulated. This usually requires ether, as nitrous oxid does not entirely relax the muscles. Then a plaster jacket is put on, great care being taken to obtain the normal lordosis and fit it sufficiently to the pelvis so that the joint will not slip out. Sometimes nothing is accomplished at the first manipulation except the stretching of adhesions. Often it will be found necessary to apply a light spring back brace, after the plaster jacket is removed, to assure oneself that the trouble will not return again from bad posture and also to retain the normal lordosis until the patient learns to stand properly.

There is one thing that I wish to call attention to, and this is that ordinarily when a patient is placed on an operating table under an anesthetic no provision is made to maintain the normal curves of the spine. When the muscles are relaxed these curves are lost and with the legs extended or perhaps tied down, the psoas and iliacus must stretch. Now, if a small pillow is placed under the lumbar spine and a larger one beneath the knees this cannot happen. The surgeon has this advantage, if this is followed out, the abdominal muscles are lax and therefore can be retracted more easily and the different pelvic organs are more nearly in their normal positions. The pelvis is, of course, slightly deeper, but the patient will not have the troublesome backache with perhaps sciatica, that so often causes suffering after an operation.

2047 East 9th St.

The Surgical Aspect of Tuberculous Cervical Lymph Nodes in Children.

By A. F. HOUSE, M. D., Associate Prof. of Clinical Surgery, College of Physicians and Surgeons; Surgeon to St. Clair Hospital, Cleveland.

The chronic granulating and caseating inflammation of the lymphatic glands, which goes to make up the general picture of tuberculous lymphadenitis, forms one of the most important diseases to which these structures are subject. Since the discovery of *Bacillus tuberculosis* the field of glandular tuberculosis has been widened and many enlarged glands, which formerly were considered to be simply inflamed or scrofulous, are now known to be really tuberculous.

The changes in the gland produced by the tubercle bacillus are manifold, and the anatomical and clinical picture of the disease may vary in its type and progress. The number of bacilli present is usually small and they may even escape detection. The size of a tuberculous lymph node varies from that of a split pea to that of a walnut, and all show the same pathological changes.

Caseation: This may occur in single or multiple foci, and may be as small as a pin-head or when they change the entire gland to a uniform caseous mass. The retrograde changes which may take place in this caseous material vary. In one case the tissue may be soft or even fluid, in another so hard that a section presents a gummatous appearance. Liquefaction leads to the formation of abscesses with pus-like contents consisting of degenerated cells and detritus. In many instances

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Read before the Academy of Medicine of Cleveland, October 15, 1909.

the lymph nodes remain for a long time as a semielastic swelling, which is freely movable under the skin. In this form the glands usually break down late; they crowd closely together and sometimes attain the size of a hen's egg. On section they present a pinkish gray appearance; they are easily broken down under the finger, their contents resembling somewhat the medullary substance of the long bones, although being somewhat firmer. This form, in which an apparent quiescent state is maintained for a considerable length of time, is the type which is most frequently found in adolescence.

In the class of tuberculous lymph nodes which undergo rapid suppurative changes and cheesy metamorphosis, the products of suppuration collect in the capsule of the gland, a paradenitis follows and adhesions to the surrounding glands, skin, vessels and muscles occur. The thickened capsule and the surrounding fibrous tissue often form a barrier for a time to the advance of intracapsular suppuration. Finally, however, perforation of this fibrous covering takes place and the tuberculous pus and debris pours out into the surrounding tissue and reaches the surface directly or in a roundabout way. Subcutaneous abscesses, fistulae and ulcerations develop in this way, often leaving unsightly and disfiguring scars. Microscopic examination shows cellular infiltration, principally with migrating leukocytes and newly formed lymphoid cells. Between these areas of infiltration, small foci of suppuration and caseous degeneration are found. This is the variety which is usually found in children. Mixed infection of tuberculous lymph nodes with pyogenic cocci is quite common. This condition gives rise to acute suppuration and periadenitic inflammation. The cause of such an abscess is not recognized in many instances until at the time of operation, the admixture of caseated gland remnants with pus is found.

Etiology: There can be no question but that tuberculous lymph nodes occur more frequently in children who live in bad hygienic surroundings, who are poorly fed and illy nourished. In the majority of cases the disease is at first a local process, and the tubercle bacilli reach the glands through the lymphatic vessels. The most common atria of infection seem to be the throat, mucous membrane of the nose, carious teeth and diseased gums, moist eczema of the face and scalp, also inflammation of the external and middle ear.

This, no doubt, accounts for the frequent occurrence of tuberculous inflammation of the glands of the anterior and lateral regions of the neck. That the tonsils play an important rôle in the infection of glandular tuberculosis there can be no question: this has been demonstrated by Schlenker, Kruckman, Baumgarten and others. The anatomical structure of the tonsils predisposes to the entrance of bacilli, for the epithelium is always porous, owing to the perpetual transmigration of leukocytes, and may even be absent over small areas. The invasion probably takes place through the crypts, which are well known hiding places, and which form a veritable hotbed for the propagation of the organisms.

The enlargement of the tonsil and its irregular surface in chronic hypertrophy favor infection, for the reason that the resistance of the tissues under these conditions is diminished by the primary catarrh and the loosening and throwing off of the epithelium.

Tuberculous disease of the cervical glands is the most common of tuberculous lesions, and is met with chiefly in the first half of life, occasionally in quite young infants. It is very frequent in childhood and adolescence, and less often encountered after 30 years of age. It is quite common among children of the poor and especially in the dwellers in ill-drained, ill-ventilated, low-lying, overcrowded quarters, and during the convalescence from some of the acute infectious diseases, as diphtheria, measles, scarlet fever and whooping cough.

Symptoms: The special features of tuberculosis of a lymph node are its chronic course, the occurrence of softening and the infective nature of the disease, as shown by its spreading from gland to gland. The diseased lymph nodes are always swollen and, until softening has occurred, firmer than natural, ovoid in shape, generally painless, and more or less fixed to the surrounding tissues. As the glands soften they become more globular in outline, and when a tuberculous abscess has formed outside the gland the swelling increases, fluctuation can be elicited, the overlying skin is not discolored until pointing occurs when it becomes thin and red, skin necrosis soon takes place and the abscess bursts leaving a large and unsightly scar and in many instances a persistent sinus. As a rule the child complains of but slight pain or tenderness, and then only on manipulation of the part. The onset of the affection varies: it may be quite insidious but on the other hand cases occur in which it is more defined or even abrupt, as in those which follow an attack of scarlet fever, measles, tonsillitis or a common cold. In this class, during rapid growth or suppuration, anemia and loss of flesh become manifest, and the issue of these very acute cases is bad.

In the former group one or more lymph nodes, if not properly treated, may break down and suppurate. They will then slowly discharge for a long period and may finally heal, only to be followed by the breaking down of other nodes of the group. When this condition continues for any length of time, extensive ulceration of the skin will be found and fungous masses of granulation tissue form at the openings of the sinuses. Deeper seated suppurating glands usually rupture into the periglandular tissue and the pus burrows between the individual glands. If it reaches the connective tissue sheaths of the large vessels and muscles, it may descend and come to the surface just above the clavicle in the suprasternal region, or even on the anterior surface of the chest. This process may continue for years, if a general infection does not meanwhile take place. Again, any group of glands may be primarily affected and form extensive tumors. In the majority of cases, however, the extension is from above downwards, the glands of the upper half being first affected and later on those of the lower half. Extension rarely takes place upward, that is from the glands of the lower triangle of the neck to the upper ones. It is also a notable fact that tuberculous lymph nodes usually exert no influence whatsoever on the general condition. In only 10% or 12% are general constitutional disturbances present, such as loss of appetite, anemia, loss of flesh, etc. In non-complicated cases fever is not present as a rule. If there is a rise in temperature, the cause is usually some suppurative process produced by mixed infections or coincident tuberculous disease of other organs, especially the lungs, bones or joints.

Diagnosis: So far as I am aware there is no differential diagnostic criterion in the initial stage of glandular tuberculosis. The surgeon is not able clinically to determine when simple hyperplasia ceases and tuberculosis begins. It is not possible to say positively whether there are bacilli or nodules or small foci of caseation present, without a microscopical or bacteriological examination of the enlarged glands. The initial stage of glandular tuberculosis does not differ clinically from that of simple hyperplastic enlargement. If, however, this enlargement of the glands remains stationary for a time, and then diminishes in size, after subsidence of the irritation in the region drained by the afferent lymphatics, the enlargement will, in all probability, be found to be non-tuberculous. If, on the other hand, the glands increase in size, and especially if softening occurs with adhesions to the surrounding tissues, tuberculosis is to be suspected. We must also bear in mind that the great majority of lymph nodes which are located in the classical subparotid region, which are as large as hazel nuts, and which have remained stationary or gradually increased in size for several months, as a rule are tuberculous. In those cases of tuberculous lymph nodes associated with abscesses and sinuses, the diagnosis is quite easy. Even when in the presence of an unbroken skin the upper lymph nodes are found to be soft, though the softening has appeared suddenly or slowly and the lower nodes extending toward the clavical are progressively smaller, the process is without doubt one of tuberculous inflammation. This is in marked contrast to the non-tuberculous deep abscess formation which occurs in young children, or to a submaxillary abscess, which is caused by an infection from carious teeth, etc.

The cardinal points, then, in the diagnosis of tuberculous lymph nodes are the persistence of the glandular enlargement, the absence of acute inflammatory signs, the evidence of periadenitis fixing the gland, the softening of the swellings, the number of the glands affected, the age and general condition of the patient, and finally, in obscure or doubtful cases, the excision of one of the enlarged lymph nodes for the purpose of making a microscopical examination which will enable one to make a diagnosis.

Prognosis: The prognosis should always be considered as grave, dependent somewhat on the type of the disease, the age and the condition of the patient. The chief danger in tuberculous lymph nodes, is the tendency of the infection to become general. This may occur either through the lymphatics or by extension through the circulatory system. On the other hand, a spontaneous recovery may take place at any stage of the disease. Foci of caseation may become encapsulated or calcified and the process remain stationary or disappear. Abscesses sometimes heal after rupture, and sinuses and ulcers may close after removal of the tuberculous tissues. A tuberculous focus means danger to the entire organism, and proper treatment should be instituted as soon as possible to render the diseased process inert.

Treatment: The surgical treatment may be conservative or radical. The former consists in the removal of all peripheral sources of infection. For instance, if a child be presented for treatment with movable glands in the upper triangle of the neck, and considerable hypertrophy of the tonsils exists, we should first of all excise the tonsils. If the enlarged lymph nodes do not diminish in size in a few weeks it is quite reasonable to suspect tuberculous inflammation of the node, provided no other etiological factors can be found. Even in cases of simple hyperplastic enlargement in children with a tuberculous taint, or in those who are in contact with tuberculous adults, general hygienic and constitutional measures should be used. Eczema of the face and head and catarrh of the nose and throat should receive proper treatment, carious teeth should be removed, discharges from the ear and all lesions of the skin on the head or neck should receive careful attention. When conservative measures fail, there is no doubt but that radical excision is the safest and best procedure.

Radical surgical treatment is being more and more widely acknowledged as not only furnishing the most successful method of dealing with the disease, but in a measure removing the danger of further infection from each tuberculous focus. The marked improvement in the general health that follows the complete eradication of tuberculous lymph nodes, is another reason in support of operation.

The form and location of the incision, and the cosmetic results must be taken into consideration so that the resulting scars may be as little disfiguring as possible. The fact must, however, be remembered that the disease is always more extensive than would be supposed, judging from the outward appearance alone. The results of the operation are the more favorable the more thoroughly all evidence of disease is removed.

A transverse incision is the most desirable one in the removal of cervical lymph nodes because the resulting scar is less significant. Longitudinal incisions tend to stretch and annoy the patient from the resulting cicatrix. When, however, there is very extensive involvement of the lymph nodes, it is better to make a longitudinal incision along the posterior border of the sternocleidomastoid muscle. This can be connected with a short transverse incision either in the upper or lower triangle of the neck, or both, to meet the emergency of the case. In the removal of enlarged nodes in the submaxillary region, it is best to make the transverse incision at least a finger's breadth below the angle of the jaw, in order not to injure the supramaxillary branch of the facial nerve which supplies the depressor labii inferioris, for when this nerve filament is cut a very awkward paralysis of the mouth may result. The incision should then be carried through the platysma and deep fascia and the parts retracted upward, carrying the nerve which lies between these structures out of harm's way.

In the extensive longitudinal or so-called anatomic incision, as it follows the main trunk of the venous system of the neck, the internal jugular, along which the glands cluster from the mastoid process to the clavicle, one should be exceedingly careful not to injure the spinal accessory nerve. It emerges from the jugular foramen, close to the spinous process, and passes into the under border of the sternocleidomastoid muscle at the junction of its middle and lower thirds, and enters the trapezius. In this locality it lies beside the branches of the cervical plexus, and may be easily cut in dissecting out nodes of the posterior chain. Section of this nerve in its upper location may be followed by paralysis of the sternocleidomastoid and trapezius muscles, with drooping of the shoulder. If section occur in the lower portion a weakness of the trapezius and drooping of the shoulder may result. It will therefore be seen that a most careful and painstaking separation of the nodes must be made until the nerve is detected.

In the treatment of the wound little need be said, with the exception that ample provision should be made for the abundant serous discharge which usually follows these operations.

It has been my custom to use a few strands of silk or preferably silk worm gut through the lower angle of the wound or through a posterior counteropening. The margins of the wound should then be brought accurately together by subcuticular silk worm suture and protected by an ample dressing. These dressings should be changed as often as they become soiled, in order to prevent infection.

8926 Euclid Ave.

Chronic Lead Poisoning as a Diagnostic Factor in Appendicitis ; Report of a Case.

By IVAN I. YODER, A. M., M. D., Cleveland.

In reviewing the literature touching the borderland of lead poisoning and appendicitis, one finds very little written and few authors mentioning it; furthermore lead poisoning is perhaps the most prevalent metal or trade disease we meet, while appendicitis occupies an equally frequent position among the surgical disorders of the abdomen.

The consideration of the case here presented may add nothing new to this borderland literature, but its purpose is to place more permanently plumbism in an important position among the disorders to be differentiated from appendicitis.

A deplorable fact is that none of the works on surgical diagnosis consulted, namely, Johnson, Eisendrath, or Martin, as much as mention this subject. The only work on medicine mentioning it is that by Allbut and Rolleston, in which it is discussed at some length. It is merely mentioned in a work on "Pain" by Schmidt, Vogul and Zinsser. The only surgical work that considers it is Kelly and Hurdons' admirable work on "The Appendix" in which two-thirds of a page is devoted to the subject.

Lead poisoning is not a tropical disease, or rare, or far removed; but is surprisingly frequent right in our midst. Lead factory workers, painters, glaziers, glass workers, plumbers, employees in plumbers' supply houses, electric battery makers and chargers, every case of lead salt medication, and others employed in arts and trades wherein lead and its salts and alloys are liable to plumbism.

There is no metallic poison of any marked prevalence that works so insidiously and obscurely. Of many exposed to lead's poisonous action comparatively few are real sufferers from plumbism, and this fact breeds recklessness and disregard for prophylactic measures. Also cases have been reported of a return of saturinine symptoms 10 to 19 years after removal from exposure and apparent cure.

The case to be reported is as follows:

K. T., 42 years old, male, American, weighing 90 lbs., five feet, seven inches tall, was a salesman in a plumbers' supply house. He was somewhat anemic, yet well nourished.

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Previous history: He had been treated for two severe attacks of acute appendicitis by well known physicians, five and two years previously. He had also been under my care for what appeared to be chronic appendicitis with tenderness over McBurney's point, gaseous distention of the cecum and ascending colon, constipation and symptoms of hepatic torpor. He had an annual winter attack of lumbago, and was subject to neuralgia and migraine.

Present history: On March 26, 1909, he complained of violent pains over the entire abdomen; he was nauseated and vomited, and was sensitive over the abdomen, more particularly over McBurney's point. The temperature was 101.5° F; respirations 27; pulse 90; bounding and full. No blood count was made. The urine was normal.

A diagnosis of acute appendicitis was made. An operation was advised but refused. An ice bag was placed over the usual site and general Ochsner treatment followed with temporary good results.

On March 27 the general condition was about the same; temperature 101°; pulse 92; nausea somewhat abated; no vomiting.

On March 28 he had an attack of severe pain, retching and vomiting with great prostration; pulse 110, temperature 102°. He had marked rigidity of the right abdomen, extreme sensitiveness over McBurney's point, and flexion of the right thigh. As it was feared that rupture of the appendix had occurred, he consented to operation and the appendix was removed without further delay.

On opening the peritoneum there was found a subserous, slightly blood stained discharge. The appendix was of extremely small caliber, two and one-half inches long, lobulated and somewhat kinked, but showed no signs of any inflammatory process, and was free from adhesions. The outer, lower wall of the cecum was infiltrated, somewhat edematous, bluish-red and roughened, giving the appearance of subacute peritonitis. The lower ileum was lobulated and its lumen quite narrowly constricted at intervals.

There were also found lesions of which I can find no description in saturnine pathology, namely, hemorrhagic patches of bluish-red color the size of a dime, were scattered at intervals over the cecum and lower ileum.

His colicky pains ceased after operation and he had no more pain during a speedy convalescence than we find in most laparotomies in which some meteorism is found.

On finding no pathological condition in and about the appendix grave enough to account for all symptoms before operation, his occupation as a salesman in a plumbers' supply house gave a clue which yielded results.

A faint blue line was found on the gums near the margin of the teeth, and in a few weeks he complained of weak wrists and later of weak ankles. He was put on treatment for chronic lead poisoning which he is still following, and he has had no return of any colic.

The symptoms of acute lead poisoning briefly are the saturnine triad—colic, constipation and vomiting; anemia; cachexia; neuralgias; wrist drop, and weakness of various muscles; swollen metacarpophalangeal joints; a bluish black lead line, most prominent on the lower gums near the dental line, fairly constant, persistent, and favored by bad teeth, uncleanliness, and ulcerated gums.

Murphy, in Keen's Surgery, gives the following order of symptoms for appendicitis: first, sudden and severe pain in the abdomen, primarily in the epigastrium; second, nausea and vomiting; third, sensitiveness over McBurney's point; fourth, elevation of temperature; fifth, leukocytosis. The order here given is as they should occur in natural sequence, and when the order varies he always questions the diagnosis.

Kelly and Hurdon mention Bernard who reports a case in which the appendix was removed on account of abdominal symptoms suggestive of appendicitis. The following year the patient suffered from an attack of an exactly similar nature, and it was then found that he was the subject of lead colic. Kelly and Hurdon further state that in chronic lead poisoning an attack of colic is often preceded by gastric and intestinal symptoms, particularly constipation. The pain over the whole abdomen is usually paroxysmal; there is no general or localized tenderness; and pain may be relieved by pressure. As a rule the pulse rate is retarded and there is increased tension. There is often, in addition, a dull heavy pain between the paroxysms, and there may be vomiting. Attacks of pain with acute diarrhea may also occur. Acute lead poisoning may present vomiting and pain, with gastro-intestinal symptoms of the most intense description, accompanied by collapse which may prove rapidly fatal.

Acute poisoning may simulate acute appendicitis which at the onset presents signs of acute diffuse peritonitis accompanied by signs of collapse. In such a case the temperature, pulse and leukocyte count may not present points of differentiation.

A diagnosis of appendicitis is favored by localization of the pain in the right iliac fossa, rigidity of the abdominal walls, localized or diffuse tenderness, elevated temperature and accelerated pulse. A mass found in the right iliac fossa is the only sure evidence of appendicitis.

Coincident cases of plumbism and appendicitis are the most important. A lead poisoning case which is considered to have merely the usual symptoms of plumbism may be seized with an attack of acute or chronic appendicitis.

Allbut and Rolleston say: "Lead colic has been mistaken for appendicitis, and an acute attack of appendicitis during the course of lead poisoning has been overlooked. Perforating appendicitis, followed by death, is known to have occurred in plumbism." They differ from Kelly and Hurdon in saying that pain is not diagnostic, that it may be referred to either or both iliac fossae, and that pressure usually does not relieve pain. They further state that there are usually no distended coils of intestines, no rise in temperature, no early vomiting and a diminished area of hepatic dulness. The patient should be watched for a few hours and especially the pulse which is usually slow, extremely small, almost imperceptible, or it is hard resistant and of high tension. A feeble pulse is present between colicky pains and high arterial tension during attacks of pain. High arterial tension is not common in other forms of colic. In lead colic, intestinal spasm and vasoconstriction in the splanchnic area, which is one of the principal causes of high arterial tension, frequently go together.

The urine is diminished to eight to twelve ounces a day during attacks of colic. It is free from albumin but the urea is diminished; when the pain subsides the urine and urea again increase.

The case here reported had symptoms in the sequence following Murphy's outline, differing as to location of the primary pain, and in the fact that a blood count was not made. However, a rise in the white count would have been found as a leukocytosis exists in acute poisoning by corrosive metallic salts. Blood analysis is differential only when the basophilic granules in the erythrocytes are demonstrated, as this condition is fairly constant in lead poisoning.

In conclusion, the only diagnostic factor of any value is, as suggested by Kelly and Hurdon, the presence of a mass in the right iliac fossa which is conclusive for appendicitis.

It can readily be seen, however, that in such extreme sensitiveness over this area as was present in the case here reported, the palpation of a mass would have been impossible unless done under the influence of a general anesthetic.

1410 West 25th St.

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Exophoria, with some Reference to its Causes, Reflex Disturbances and Treatment.

By EDWARD LAUDER, M. D., C. M., Cleveland.

In selecting this subject for a brief paper before this Section I do so with some hesitation, yet conscious of the possibility of a dearth of information among the general practitioners concerning this ocular difficulty.

It has been stated that surgery has made such advances in the last decade that not even the average practising physician, much less the lay public, can keep up with it. The same authority states that the average medical man is about five years behind the times in this matter, while the public is at least a generation behind. If this be true in reference to major surgery, in which all are so widely and vitally interested, how much more must it apply to knowledge in reference to certain symptomatic, etiologic and therapeutic questions pertaining to the eye, for here too, rapid and extensive strides have been made in dealing with certain pathologic as well as anomalous anatomic conditions. Unfortunately, all literature pertaining to the eyes is more or less ignored by the general practising physician, who forgets that that organ may be, and often is, involved in a number of ways which have a direct bearing on the health and general wellbeing of his patients, and also that it often is involved secondarily to some pathologic change affecting other organs of the body and may be, and sometimes is, indeed, the organ to give the initial symptom and point the way to a final diagnosis and prognosis.

The whole question of disturbance of muscular equilibrium of the eyes occupies the parallel in ophthalmology that the fifth proposition of the first book of Euclid does in geometry, which, as you all are aware, is known as the *pons asinorum,* or "asses' bridge." Thus it is that the very opposition to an easy solution gives stimulus to those who would make progress, and each must

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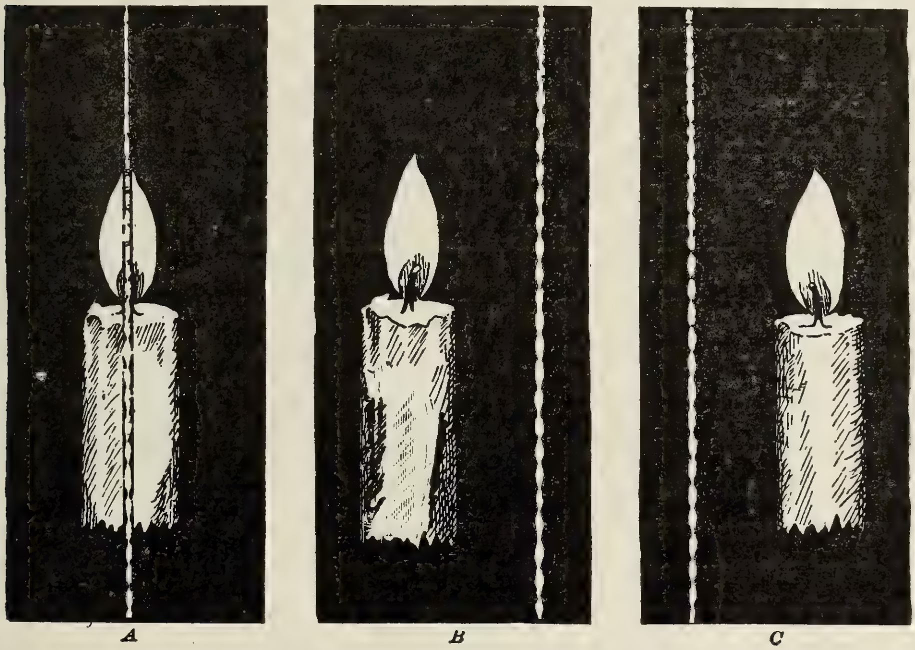
pass through the ordeal for himself, working out a satisfactory basis of understanding along certain defined principles.

It is not my purpose to enter into a lengthy dissertation on the subject of exophoria, but rather to state concisely the condition, its causation, symptoms, and treatment.

Definition: Exophoria is a tendency of the eyes to deviate outward so that unless held in place by continuous effort, which is controlled by the power of fusion, they diverge from the point of fixation.

Exposition: By the use of a Maddox rod, which consists of a glass rod or series of rods mounted in a disc to fit the trial frame, the natural image of a small flame, such as a candle or gas flame, placed at 20 feet distance in a dark room is converted into a streak of light. Assuming that the Maddox rod is placed horizontally before the right eye, the patient will see a vertical streak of light with that eye and the flame with the left eye.



Maddox's Rod-test for Horizontal Deviation.

The rod is before the right eye. A, the line passes through the flame,—orthophoria. B, the line passes to the right of the flame,—latent convergence, or exophoria. C, the line passes to the left of the flame,—latent divergence, or *exophoria*.

Each eye now having a separate object of widely different shape to look at, the power of fusion is destroyed and, as a result, each eye will occupy its independent position in the orbit. If there is perfect equilibrium between the lateral recti muscles of the eyes the streak of light will pass through the flame; if there is a tendency to convergence the streak of light will be to the right of the flame, while, if there is a tendency to divergence, the streak of light will be to the left of the flame, which condition will indicate exophoria. This can be measured by prisms so that the exact amount of deviation may be known in prism degrees.

Causation: There is more or less controversy as to whether these imbalances are functional or organic. My experience leads me to believe with those who contend that perfect muscular balance is directly dependent upon organic conditions, that is, the relative anatomic formation and insertion of the recti muscles. Conversely, a disturbance of perfect muscular balance, as in exophoria, is due to an anomalous anatomic formation or insertion. These anomalous conditions may be exhibited in an overdevelopment of an external rectus or the external recti, or an underdevelopment of an internal rectus or the internal recti, or a malposition of insertion.

Symptoms of reflex disturbances: Headache and eyeache are the most constant symptoms of reflex disturbances, while vertigo or a sense of strain, or a feeling of mental confusion may be present in severe cases. The headache has been regarded as more likely to be occipital than the headache due to refractive errors; but there is no very marked difference in this respect. Sometimes the patients state that after reading, writing, sewing or use of the eyes at other near work for a time, they begin to find the objects spreading, becoming indistinct, and perhaps doubled. Much has been written upon the relationship of some nervous diseases, especially epilepsy and chorea, to want of proper balance of the eye muscles, it being considered that these conditions were either aggravated or actually due to this ocular defect.

Treatment: In the experience of the writer there is no class of cases that so severely taxes the ingenuity and patience of the ophthalmic surgeon, as well as the patience of the subject, as some of these cases of muscular imbalance. While it is true that a number of them yield promptly to one or other of the methods of dealing with such cases, yet we do find some which most stubbornly resist all efforts for complete relief.

Consideration of exophoria in relation to treatment can be simplified by a division into two classes, first, exophoria with *normal* duction power of the external recti, but *weak* duction power of the internal recti; second, exophoria with *excessive* duction power of the external recti, and *relatively normal* duction power of the internal recti. Having these two classes, treatment may be considered under three heads: 1, gymnastics; 2, optical; 3, operative.

Gymnastic treatment: This has reference to exercise of the internal recti muscles by the use of prisms, by means of which they may be developed in size and in duction power, just as the biceps may be increased in size and in lifting power by means of dumbell exercise. This sounds simple and is beautiful in theory, unfortunately, its application is limited to a certain type of case. With a well developed fusion power, prismatic exercises will often accomplish a good deal in the first class, that is, exophoria with normal duction power of the external recti, but weak duction power of the internal recti. In that other class, exophoria with excessive duction power of the external recti, and relatively normal duction power of the internal recti, little can ever be accomplished toward securing comfort for the patient, though in favorable cases the duction power of the internal recti will sometimes be very much increased, but the fact that they have so much resistance to overcome in the abnormally strong external recti soon brings a recurrence of the old set of symptoms. The use of prisms for gymnastic purposes is well illustrated in the following case:

W. E. B., aged 33, occupying position of chief clerk to a railroad official, consulted me in January 1908, complaining of headaches and difficulty in prolonged accommodation and convergence. Examination revealed a low grade of compound hyperopic astigmatism, exophoria of 2° and a duction power of 5° for each external rectus and 8° for each internal rectus.

I prescribed for the refractive error, at the same time telling the patient that the glasses would probably not give complete relief as a certain condition remained uncorrected and would probably require attention later. The glasses relieved him to such an extent that I did not see him for three months. At this time, May 7, 1908, the muscle balance showed the same condition as at the examination in January. I ordered muscle exercises with a pair of 5° prisms. In one week the duction power had increased from 8° in each eye to 15° in each, at which time I ordered exercises with a pair of 10° prisms. One week later the duction power had increased 20° with each internal rectus and I then increased the prisms to 15,° with instructions to keep them permanently and use intermittently as he now felt comfortable in prolonged use of his eyes. This was a favorable case and the results all that could be desired.

Optical treatment: By this I mean the giving of relief by prescribing a prism for constant wear, or obtaining the same result by decentering convex or concave lenses, should it be necessary for the patient to wear either.

In certain cases of exophoria, due either to excessive duction power of the external recti muscles, or to deficient duction power of the internal recti muscles, weak prisms, worn with the base in, give much relief. This should be tried in those cases in which the gymnastic treatment has failed. It is seldom justifiable to give more than a 3° prism before each eye, because of the chromatic aberration of light, or distortion of a plain surface which is apt to be produced. A prism thus worn may be likened to a crutch, inasmuch as it is giving support to a weak member. Results thus obtained are illustrated in the following case:

Mrs. H. B., a physician's wife, consulted me in April 1907, because of pain in eye and head. Examination revealed a simple hyperopia in the right eye and a compound hyperopic astigmatism in the left eye, also an exophoria which varied from 4° to 6°, and a duction power of the external recti muscles of 6°, and of the internal recti muscles of 8°. The refractive error was corrected by the proper glasses and muscle exercises ordered with a pair of 5° prisms. After a few weeks' use of the prisms, with no increase in strength in the internal recti, the exercises were discontinued and decentered lenses ordered. This gave comfort for a little over a year, at which time, June 1908, I found it necessary to prescribe a 3° prism, base in, with each undecentered lens. The patient has been quite comfortable up to the present time.

Operative treatment. The conservative oculist will reserve this method for the last, and advise it only in those cases in which gymnastic and optical treatment fail to give relief, and in those cases also in which, from the outset, it seems apparent other methods will be of no avail. The operative procedure consists in giving more power to the abnormally weak internal rectus, or recti, by shortening the same, the tucking operation being preferred by the writer as nature's original insetion is not disturbed, or, in weakening the abnormally strong external rectus, or recti, by a partial or complete tenotomy, or by a combination of the two procedures, that is, shortening of the internal and tenotomy of external. The following case is one in which it would have been useless to temporize, as results could be obtained by operation only.

Miss A. W., aged 24, school teacher, consulted me March 14, 1908, complaining of persistent headaches, with occasional blurring of vision and a feeling of mental confusion. At times she was compelled to give up her work. She was wearing glasses, +0.25 cyl. axis 90° combined with 2° prism, base in, before each eye. Examination under a cyclopegic failed to reveal any refractive error. There was, however, an exophoria of 12° for distance and 21° in accommodation. The muscles showed a duction power of 15° for each internal rectus muscle, and 15° for each external rectus muscle. Subsequent examinations confirmed original findings, so I advised an operation. This was agreed to, and on May 22, 1908, I performed a graduated tenotomy on each external rectus. There was decided and immediate improvement, the exophoria being reduced to less than 3°.

Conclusions.

1. Exophoria may exist by itself or in conjunction with a refractive error.
2. Exophoria, like hyperopia, may be partially manifest and partially latent, or the total amount may be manifest.
3. Exophoria, if latent, will require weeks or months for an accurate estimation, as no drug is of value as is atropin in determining latent hyperopia.
4. Exophoria may produce a train of symptoms or reflex disturbances equally as distressing as a refractive error, such symptoms being headache, eyeache, vertigo, a sense of strain and of mental confusion, objects appearing to spread, becoming indistinct and perhaps doubled.
5. Exophoria exists in a considerable percentage of all cases complaining of symptoms referable to the eyes, and none but those thoroughly conversant with the principles of refraction and the value of prisms, as well as the anatomy and physiology of the eye, should be entrusted with the care of these cases.

314 Osborn Bldg.

Pasteur's Contribution to Preventative Medicine and Bacterial Invasion.

By R. J. CARY, Cleveland.

In the vast realm of science and medicine, there is no human being whose life and labors have contributed so much to the advance of preventative medicine and cure of disease as has that of Louis Pasteur. Though born in the humblest of homes, Louis Pasteur's life was from the beginning dignified by the spirit of a household whose great concern was to live worthily of France.

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He was the only boy in the family and, in spite of poverty, it was determined that he should be educated. From boyhood, chemistry and physics were his chosen subjects. At the early age of 17 he began his enthusiastic researches in chemistry, being especially interested in the difficult and important problem of molecular dyssymmetry. He was the first to satisfactorily explain the action of polarized light upon tartaric and vaccinic acid. Here was a question of pure chemistry, but it was to lead Pasteur directly to the study of fermentations.

Pasteur discovered that if a solution of tartaric acid, in the form of the tartrate, be left untouched, a change occurs after some time in the chemical constitution of the liquid; before Pasteur's time this had been overlooked. The original solution had no action on polarized light, but after fermentation this same solution became capable of deflecting polarized light. The explanation given of this phenomenon at that time was that the tartaric acid was decomposed by *fermentation.* However the nature of this mysterious phenomenon was quite unknown, until Pasteur demonstrated it by a very beautiful experiment. A sugary solution of the carbonate of lime was allowed to stand until after a certain time it began to effervesce, CO_2 being evolved, and lactic acid formed, which decomposed the carbonate of lime to form the lactate of lime. This lactic acid is formed at the expense of the sugar, which disappears little by little. Pasteur showed that the efficient cause of this chemical action was a thin layer of organic matter; that this layer of organic material consisted of extremely small moving organisms, which increased in number as the fermentation went on. Their growth it was, then, which produced the phenomenon of the transformation of sugar of milk into lactic acid. Further substantiation of this conclusion was offered by the fact that in the sugary solution in which all preexisting germs had been destroyed by heat, no lactic acid fermentation took place; but by introducing into this sterile liquid a small quantity of this layer of organic matter, it was found that the lactic acid again formed rapidly in the new solution.

Nowadays, such an experiment seems so extremely simple that we can scarcely perceive its importance. It seems to us now, that from all time we must have known that an organic solution when heated was sterile, and that a germ would suffice to render it capable of fermentation. But let us remember that this great fact of the generation of germs was absolutely unknown before Pasteur, and the methods of sterilizing liquids, and of their inoculation with spores, was revealed by Pasteur.

It is a feature of great discoveries that they become popularized in a short time, and thus very quickly become elementary. A first year medical student knows perfectly that which neither Lavoisier, nor Liebig, nor any one before Pasteur had been able to perceive. We are always tempted to be ungrateful to great creators for their creations pass rapidly into the domain of common knowledge and become so simple that they cease to surprise us. We do not think of being grateful, and we forget the efforts which genius has had to make to wrest the truth from jealous Nature. Let us not be ungrateful; let us remember that the recognition of the real cause of all fermentation (the development and germination of organized elements) dates from 1857 and from the celebrated memoir of Pasteur upon lactic acid fermentation. A new world was then opened to science.

Nevertheless, this memoir of Pasteur's containing one of the fundamental discoveries of the century, was not welcomed as it ought to have been. At first its importance was not understood, and afterwards absurd contradictions were opposed to it. A whole series of beautiful and decisive experiments were necessary to prove that there is no such thing as spontaneous generation, and that sterile liquids remain sterile indefinitely, so long as no germs are introduced into them. Pasteur devoted six years (1857-1863) to the proof of the fundamental fact that "organic liquids do not alter until a living germ is introduced into them, and living germs exist everywhere."

The microbic theory of disease: A great step yet remained to be taken. This was to determine the evolution of these germs, not merely *in vitro,* but in the living organism. We, to whom the idea of parasitism and microbic infection is now so familiar, can scarcely conceive that it has not always been there.

The microbic theory has become so ordinary, so popular, that we are tempted to believe that the part played by microbes was understood even in the times of Hippocrates; but as we all know this was by no means the case.

Pasteur, to whom we owe the word "microbe," was the first also to explain to us in his essay on the silkworm disease, published in 1867, the part they played in the production of disease. He proved that the bright corpuscles found in the bodies of diseased silkworms are living germs, a distinct living species, a parasite which can multiply and reproduce itself and disseminate the contagion. Perhaps many of you have understood or believed that the discovery of the part played by microorganisms in disease was due to Koch, and dated from about 1867. But let me remind you that, 10 years before this, Pasteur had published his experiments on pebrine and flacherie which definitely proved that at least these two diseases were certainly the result of microbic or parasitic invasion.

Thus, by successive steps, did the work of Pasteur develop in all its greatness and logic. In the first place, in order to elucidate a chemical problem, he studied tartaric fermentation; then he was led to study lactic fermentation, and he showed that they were biological phenomena. He then pursued the analysis of these phenomena with all their consequences, and was led to the conception that disease was due to the development of a parasite.

The normal living being follows out its course of growth without the development of any organic parasite in its tissues or in its humours. But if these humours or tissues happen to be inoculated with any organism capable of developing, then this small living thing multiplies, the higher organism is infected, and the whole body becomes, as it were, a culture fluid, in which the pathogenic organism propagates itself, a center of infection which scatters the disease by sowing the noxious germs wherever it goes. Thus arose the new conception, profoundly new not only for medicine but for hygiene—"disease is parasitism." From that time forward, we understood the meaning of the words "infection" and "contagion," previously mysterious.

It is true that Pasteur did not discover all the microbes of all contagious diseases; but this is of small moment, since he was the first to discover that infection was a phenomenon of microbic parasitism. All those who after him have proved points of detail, however important or fundamental they may be, have but followed the path traced by the master. Whether they will or not, they are all the pupils of Pasteur, as those who follow the study of chemistry are pupils of Lavoisier.

The greatest of Pasteur's disciples, Robert Koch, although with some ingratitude he refused to recognize his master, has only perfected certain points in technic and applied his ingenuity and ability to the solution of questions, which, in spite of their practical importance, are still, in the majority of cases, quite secondary. He has not been able to do very much that is new except upon the points of detail; the *essential* things have come from Pasteur himself.

Need I say that this idea of the microbe, of the parasite, has become the basis of medicine. If we take up a treatise in pathology written before this prodigious revolution, we are astonished at the insignificance and nothingness of these ancient books, yet they are not really very old; they are dated 1875 or 1880; but as one reads them it seems as though several centuries have intervened between these venerable writings and modern books.

In ten years medicine was entirely overturned and remade. It is being remade every day. Every day brings some new discovery in the matter of details; but the great principle is always there, and it must always be attributed to the one great master, Louis Pasteur.

This is not all. Another new and great discovery was to be made by Pasteur himself, and to constitute the supreme development, the culminating point, as it were, of his life's work. This is the principle of vaccination. By a series of researches, admirable for their precision, Pasteur proved that the pathogenic microbe could be attenuated, that is to say, rendered incapable of producing death; but, though the microbe does not cause death it can produce the disease, a disease sometimes so attenuated as to be almost imperceptible. Now the living being which has suffered from this attenuated disease is protected against its more serious forms, and Pasteur said that we have here "vaccination."

Fermentation, infection, contagion, vaccination; here in four words we have the work of Pasteur. What more need one say? Do not these four words possess, in their simplicity, eloquence of mind yet unequalled in the realm of medical science?

Now in as few minutes and as few words as possible, I should like to give you a résumé of the great work which Pasteur has contributed in a practical way to preventive medicine and bacterial invasion, and which was the outcome of his great researches, a brief mention of which I have just brought to your notice.

Antiseptic surgery, or the application of microbic theories to surgery: Pasteur's researches on microorganisms have had a profound influence upon operative surgery. To the presence of bacteria is due many of the dangers, which used to follow operations. If precautions are taken to exclude the harmful germs, much suffering and danger to the patient are avoided. There was a time when erysipelas, purulent infection, and hospital gangrene decimated those upon whom operations had been performed, and when puerperal infection claimed a terrible number of victims.

It seems to us nowadays that the profession before 1868 were blindfolded, and that their blindness was almost criminal. These are now no more than historic memories. A sad history doubtless, but one which we must look at coolly in order to understand what science can do for medicine. Left to their own resources, practitioners of medicine during long centuries could do nothing against erysipelas, against purulent infection, against puerperal infection; but basing itself upon science, surgery has been able to triumph over these diseases, and to relegate them to the past. All this has been made possible through the diligent and brilliant researches of Louis Pasteur.

Silkworm disease. In the year 1865 the chemist Dumas, member of the French Senate, called upon Pasteur to investigate a disease which for many years had been playing havoc with the silkworm industry of southern France. The epidemic was destroying the prosperity of many towns and villages. Already in 1849 the silkworms were sickening. The stage at which the symptoms appeared varied; sometimes the eggs were sterile; at other times the silkworms hatched out but to die. If they survived they became shiny; black spots showed themselves; the worms moved with difficulty, refused to eat, and perished; or, if they lived long enough to pupate, the pupa perished or the moth emerged in an enfeebled state and promptly died.

Efforts had been made to improve the stock by importing eggs from Spain and Portugal; but they soon became infected. Eggs were then fetched from Turkey, Greece, and the adjacent islands; later from Syria and the Caucasus. However, in a few years these resources failed, and in 1864 every silk-producing country in the world, with the solitary exception of Japan, was infected. The loss to commerce was prodigious. In a normal year the cocoons produced in southern France amounted to about 4,000,000 lbs. In the years 1863 and 1864, the amount had fallen below 1,000,000 lbs.

Pasteur, naturally, hesitated to undertake the work for he knew absolutely nothing about the raising of silkworms, or their diseases; and besides, his love for research was along quite entirely different lines. But, in spite of his hesitation, he left for the village of Alais in southern France, and at once commenced a campaign which lasted during the summers of the next five years. Almost immediately on his arrival he detected in the silkworms, the corpuscles of Cornalia and Filippi.

The organisms are comparatively large and very bright; they occur in the tissues and blood of the silkworm, and are found even in the eggs of the moth. They cause the disease known as pebrine. The occurrence of the micrococci in the eggs was one of the most important new facts observed by Pasteur. It was the first recorded instance of a parasitic organism being conveyed from one generation to another by the egg. The ease with which the organism could be detected suggested a remedy. A child, when trained, can readily identify the organism.

Healthy moths produce sound eggs and healthy larvae; diseased moths produce diseased progeny. At the present day, throughout the silkworm districts of the south of France, as soon as the moth has deposited her eggs on the piece of linen provided for that purpose, she is pinned up with the cloth; and during the ensuing autumn and winter, the women and children are occupied in microscopically examining the body of the moth, crushed in a little water, for traces of the organism. Should any be found, the eggs on the corresponding piece of linen are at once destroyed.

This method is essentially the same as that inaugurated by Pasteur in 1867 or 1868. Pasteur also showed that the infected stock spread the disease by distributing the organisms in the mulberry leaves, whence they enter the silkworm by the mouth; and that the sick inoculate the healthy by crawling over them, and piercing the skin with their pointed claws. He therefore emphasized the importance of segregating the sound caterpillars.

The above remarks convey no impression of the difficulties under which Pasteur worked. His researches were not only new to himself, but to the world. Processes, which at the present day are carried out by every medical student, had to be devised for the first time. He had to combat the criticisms of scientific men, and to overcome the almost invincible ignorance of the agriculturist, an ignorance which at one time advocated the desperate remedy of sprinkling with absinthe the leaves of the mulberry on which the silkworms fed.

Perhaps Pasteur's greatest difficulty was the fact that the silkworms did not suffer from pebrine alone; and it was some time before he recognized that he had to deal not with one disease but with two. The second disease known as "flacherie" is a disease of the digestive system caused by overcrowding and insanitary conditions in the silkworm nurseries. Like pebrine, it is caused by a micrococcus. It was while investigating this organism that Pasteur discovered that, although the germ itself cannot survive a lengthy period of desiccation, it does in certain circumstances form spores which can survive conditions fatal to the mature organism. This is the first case recorded of a pathogenic organism producing spores, the existence of which has explained so many problems in the spread of disease.

The far reaching and valuable results of these researches are self-evident. Thousands and thousands of dollars were added to the wealth of the nations; prosperity replaced the poverty and destitution which had pervaded southern France for the previous 10 or 15 years, and Pasteur's fame continued to spread throughout France and Europe.

Discovery of anthrax vaccine: There is a certain malady known, when it attacks cattle and sheep, as "charbon," and when it attacks man, as "wool-sorter's disease." The term "anthrax" covers the disease in both man and beast, and anthrax is produced by a bacterium known as *Bacillus anthracis*, which had been recognized and was accused of causing the disease before Pasteur began to interest himself in such matters. It annually carried off 20% of the sheep in some of the agricultural districts of France. In certain localities the loss was even greater, amounting at times to an annual death rate of 50%. The disease was by no means confined to France; it was spread more or less all over Europe. In Navgorod alone it was responsible for over 56,000 deaths in three years.

The bacillus which causes this disease, and which at times by inhalation effects a lodgment in the bodies of those engaged in handling wool and hides, was already known when Pasteur took up the study of pathogenic germs. About the same time it was also attracting the attention of the young German physician, Dr Cost, who subsequently became a severe critic of some of Pasteur's work; but in this paper I am dealing with Pasteur, and limitation of space compels me to leave unnoticed the brilliant work of many investigators who have made the latter end of the nineteenth century one of the greatest epochs in medical history.

Pasteur and his associates made many fascinating studies on the behavior and life history of *Bacillus anthracis.* He found it very susceptible to slight variations in temperature. The few degrees by which the temperature of the bird's blood exceeds that of a mammal were sufficient to prove fatal to the bacillus; but by an ingenious experiment, he showed that if the temperature of the bird be artificially lowered it becomes susceptible to the disease though it readily recovers if the artificial surroundings be removed. Pasteur further noted that the bacillus was not equally fatal in all animals, and that it changed its character when passed through the body of certain classes of animals.

It was, however, not in studying *Bacillus anthracis* that he made the far reaching discovery of the attenuated virus. This he first noticed when at work on chicken cholera, a disease very fatal in poultry yards; and he made the important discovery by one of those happy accidents which occur only to those who possess the genius for observation.

During his numerous experiments, he one day chanced to inoculate some fowls with a forgotten culture some weeks old. To his surprise the chickens, though made ill, did not succumb; in fact they rapidly recovered. He immediately tried what the effect would be if these same fowls were inoculated with fresh cultures of a kind so powerful as to be undoubtedly fatal to a healthy bird which had never suffered from the disease. To his delight the inoculated fowls resisted the poison and proved in fact immune.

This simple experiment is the basis of the world-wide prophylactic measures which are now being carried on against almost all forms of bacterial disease; and, although Pasteur's explanation of the weakening of the virus, which he attributed to oxygenation, has been shown to be erroneous, he must still be regarded as the originator of methods for the production of immunity by means of artificially attenuated organisms.

If the virus of chicken cholera can be attenuated, and when attenuated produces immunity from later attacks, the same is probably true of other germs which can be cultivated outside of the body. Arguing in this fashion, Pasteur returned to his study of anthrax. Here he also succeeded, and in the spring of 1881 he demonstrated the value of his treatment. Out of a flock of 50 sheep one-half were inoculated, the other half were not; the whole flock was then infected with the disease. In less than a month the uninoculated were dead of "charbon," the inoculated were perfectly healthy.

So striking a demonstration naturally had a profound effect. It inspired confidence in the treatment. Since the date of this experiment some millions of sheep have been inoculated against anthrax, and several hundred thousand oxen; and it has been calculated that, within the succeeding 12 years, 7,000,000 francs were saved by this means alone to French agriculture. Perhaps the convincing nature of Pasteur's work in this connection is best shown by the fact that the insurance companies of France insist on inoculation before they will insure sheep and cattle.

Rabies: I am afraid that I have left myself but little space to dwell on the work which occupied the greater part of the last 12 years of Pasteur's life. Already in the midst of his work on anthrax, he was thinking of rabies; and in 1881 he proved that it was conveyed through the saliva of the mad dog, and that it could be communicated to rabbits. Saliva, however, was not in every case to be depended upon. In some cases it failed to convey the disease. Experiment showed that the poison was concentrated in the brain. To this day no one has succeeded in finding the organism, if it be an organism, which causes rabies. Hence it cannot be cultivated on gelatin or agar in test-tubes, and no modified culture of the bacteria can be produced, as is now done in the case of diphtheria and other diseases. Other means had to be devised. After countless experiments it became evident that, if the spinal cord of a hydrophobic rabbit be kept dry at a temperature of 25° C. for a couple of weeks, the strength of the virus has so far vanished that, if an emulsion of the cord be injected, it produced no rabies but has only a slight vaccinating effect. If two days later an emulsion of a 12 days old spinal cord be injected, the vaccinating effect is stronger; but the body, already inured to slight doses of the poison, remains unaffected. Thus, by gradually increasing the strength of the dose, a virus may at length be injected which would infallibly produce rabies but for the previous inoculations. When an animal is bitten by a mad dog, the poison transmitted takes some time to develop, some weeks at least, and often many months. If now the artificially introduced virus "gets the start", so to speak, of the naturally introduced poison, by the time the latter is at its height the animal has become gradually immunized to the specific poison and suffers little harm.

It needed no small courage on Pasteur's part to inoculate his fellow creatures against hydrophobia. In 1885 a boy some nine years old was brought by his mother to the laboratory suffering from 14 wounds inflicted by a mad dog. After long consultations with his assistants and the most anxious deliberations, he consented to the inoculation of the boy. The next fortnight was a time of intense anxiety for Pasteur, but all went well.

His second patient is commemorated by a bronze statue which ornaments the front of the Pasteur Institute in Paris. It represents the struggle between a peasant boy armed only with his sabot (wooden shoe), and a mad dog; the boy was terribly bitten, but the treatment saved his life.

It is not easy to arrive at an accurate estimate of the death rate caused by rabies; but the most careful and moderate estimates show that, before this treatment was in use, some 25 to 40 out of every 100 persons bitten by mad dogs died a most painful and horrible death. During the last 10 or 15 years, over 25,000 persons known to have been bitten by rabid dogs, have been inoculated at the Pasteur Institute; and their average mortality has been 0.4%. In 1889, 1614 cases were treated with a mortality of 0.25%. Such results serve again to ilustrate the brilliant and magnificent contributions which Louis Pasteur has made to preventative medicine.

And now in conclusion may I call your attention to another valuable contribution which the great Pasteur has bestowed upon posterity. Not a material contribution perhaps, but one which is having and will ever continue to have an immense influence upon our further advancement along all lines of research and endeavor. It is the indisputable union of medicine and of science. This, in fact, is what ought to strike us in the work of Pasteur. It is not only in general biology and in the progress of our knowledge that his work is great; it is still more in its immediate practical applications.

The great biologists of our country, Lavoisier, Claude Bernard, Darwin and others have, without doubt, left behind them work which by reason of its conquest of new truths is not inferior to the work of Pasteur, but these new truths did not lead to any such immediate application as antiseptics, the treatment of hydrophobia, anthrax vaccination, or the prophylaxis of infectious diseases. Pasteur was not only a man of science but a philanthropist, and there is scarcely one who can be compared with him as a benefactor of suffering humanity, except Jenner, who found out how to preserve thousands and thousands of human beings from the most hideous of all diseases.

Further, Pasteur brought back medicine into the true way of science. Even after Magendie, Müller, Schwann, and Claude Bernard, it might still have been asked whether all these experiments establishing so many important truths had really been of any advantage for the relief of the sick. To discover, as did Schwann, that living beings are an aggregate of cells; to prove, as did Claude Bernard, that the liver forms sugar; to establish, as did Darwin, that living species can be transformed by the influence of long accumulated variations in the environments; these are admirable pieces of work, but work in pure science which had not any immediate therapeutic results.

Strictly speaking, though, perhaps it was possible to maintain that clinical medicine did not derive any benefit from such investigations. This was an opinion expressed by many before the time of Pasteur, but probably did not have a shadow of a foundation. However it was not so absurd to entertain such an opinion before the time of Pasteur as it has become since. Since Pasteur, no man can, without incurring the charge of monstrous ineptitude, refuse the rights of citizenship in medicine to experiment and to biology.

And to speak the truth, men of science and biologists, as though their ardour had been redoubled by the renovation of medical ideas, have during these last 10 years made discoveries which have introduced into medical science new elements, such as the action of the thyroid gland, the Röntgen rays, pancreatic diabetes, and serum therapeutics, which clinical observations alone had been absolutely incapable of discovering.

Thus on whatever side we turn, we find that medicine has always been guided by experimental science. By experiment and by science it is compelled to march forward. This was true in the time of Harvey, for that immortal physiologist had to meet the opposition of physicians. This was true also in the time of Lavoisier, when by a few decisive experiments he proved the chemical nature of the phenomena of life. But how much more true is it at the present time since Pasteur has by experiment laid open a whole world, and has warranted us in conceiving the widest hopes for the future of medicine?

Louis Pasteur was spared to take part in the triumph of his ideas, and to be a witness of his own glory. If, like so many creators, he had sometimes in his earlier days known conflicts and hatreds and petty quarrels and foolish objections, nevertheless he had not to deplore the ingratitude of mankind. He died full of honors, admired, respected, and loved.

Pellagra.

By C. A. KING, M. D., Newark, Ohio.

There is perhaps no disease that is now occupying the attention of the medical world, unless it be pulmonary consumption, more than that strange and very fatal affection, pellagra. It is not a new disease in America but has not been recognized until recent years. At times many other diseases have been confounded with it and many patients have been consigned to untimely graves on account of ignorance as to its true pathology.

Pellagra has been known in Europe since 1771, when Frapoli, an Italian, gave to it the name "Pellagra," from the Italian word meaning rough skin.

It was supposed for a long time that the cause of this disease, as suggested by the great Italian savant, Luzzoni, was from the use of Indian corn which had been imported from America to Italy. It has been shown, however, that this theory is fallacious as pellagra existed in that country long before the introduction of Indian corn and some of the cases reported never ate corn or corn bread at all. The disease for a long time was confounded with many others of a somewhat similar character which proved to be only modified forms of genuine pellagra. In 1784 it became so prevalent in Italy and some other cities of Europe that hospitals for it were established at various points, and marked advance has been made in the study of this disease. In 1879 the number of cases was almost 100,000 and the fatality was appalling in the extreme. It is stated that in Italy 50% of the peasants were affected and that in 1899, the number had reached almost 100,000.

This disease is probably not a new one in our country, but was not fully recognized, just as 25 years ago appendicitis was unheard of and the patients died of cramps, colic and perityphlitis.

The first case reported in the United States, so far as can be learned, was by Shewell in 1883 in New York City, the patient being a Genoese sailor. In 1902 Dr Harris of the Georgia Board of Health while studying hookworms found a case simulating pellagra with many hookworms. The American philanthropist, John D. Rockefeller, has recently given a large donation toward investigating the hookworm disease now prevailing with such fatality in some portions of the Southern States. Would it not be to his credit also, to include the study of the disease pellagra?

The hands in pellagra are generally first affected. The lesion in this situation is very marked and frequently appears near the ends of the fingers extending up the middle third of the forearm. It is of a diffused redness without swelling, although in some cases the latter may occur. The blebs which form on the surface rupture leaving raw surfaces which become covered with crusts. After the hands, the face is most apt to be affected, then the back of the neck. The feet also become attacked. The appearance of the skin after healing varies: sometimes it is soft, and again it is somewhat pigmented or may have the drawn appearance of a healed burn. There is intense itching, prickly sensations of the hands, back and occasionally of the lower extremities.

The prognosis of pellagra is very grave and the treatment of the acute type is of no avail. Tonics of iron and arsenic are the best known remedies.

The Parasitology and Pathogenesis of Syphilis.

By OSCAR T. SCHULTZ., M. D., Assistant Professor of Pathology,
Western Reserve University, Cleveland.

When your secretary asked that I address you upon the subject of syphilis the intimation was given that I speak of the pathology of the disease. That is the line along which my own interest has lain and it is the side of the subject that I should have chosen for discussion even if I had had any free will and choice in the matter. Syphilis is a tremendously big subject, and an exposition of even so restricted a field as its pathology is a task beyond my feeble endeavors. Moreover, even if I had anything new to offer, a detailed discussion of the pathology of lues would prove uninteresting and unprofitable. While the man

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who has had some actual practical experience in medicine must have a greater appreciation of the anatomical changes underlying those clinical conditions with which he comes in contact than the second year medical student who is apt to look upon pathology merely as one of the subjects required for the attainment of his degree, a detailed description of the pathological minutiae of syphilis would be more apropos before a meeting of pathologists than before a group of men whose interest is more in the actual practise of medicine. It has seemed better to me, therefore, not to attempt to give within a few moments a recapitulation of the almost myriad morbid manifestations of syphilis, but rather to review the development of our knowledge of the parasitology or etiology of the disease, to attempt to indicate the ways in which our understanding of its pathogenesis has been increased through the discovery of the parasite and to try to determine whether this increased information does not give us a common basis for the protean pathology of lues.

Belief in the contagiousness of syphilis has existed in the European mind since those days when the crusaders returned, not with the holy sepulcher, but with the germs of a disease that ravaged Europe like an unholy pestilence. With the development of bacteriology there began an active, world-wide search for the unknown *contagium vivum.* There began to appear upon the stage the long array of bacilli, some like and some unlike the diphtheria bacillus, others like *B. tuberculosis,* each of which was branded by its foster parent as certainly the only, real, original and genuine villain. To the group of syphilis bacilli belong Lustgarten's bacillus, deLisle's bacillus and many others beside. Most achieved such little fame that charity forbids their association with the names of their discoverers.

The bacterial flora became more and more variegated, and with each new bacterium described it became more and more improbable that the etiological agent in lues would have the characteristics of the *Bacteriaceae.* The floral investigators had to give way to the faunal naturalists—if syphilis was not due to a bacterium it must be caused by a protozoon. That was a fair enough inference, and one which had some warrant because of the constantly increasing importance of the unicellular animal parasites as pathogenic organisms. The parasites of Doehle, of Clarke, of Schüller and of Horand made their appearance. They all had in common the absence of those characteristics which a zoologist would expect a protozoon to have. Finally Siegel discovered *Cytorrhyctes luis,* which is neither a parasite nor the cause of syphilis, but which deserves some reflected glory because it led to the discovery of the actual parasite. For years men with good bacteriological and pathological training had sought in vain the cause of lues—but it remained for a non-medical investigator to clear up the darkness. Schaudinn, a zoologist, working, with the dermatologist Hoffmann, to confirm or disprove Siegel's work, made the announcement early in 1905 of the occurrence in certain of the lesions of syphilis of the peculiar organism which they named *Spirochaeta pallida*—a name soon changed by Schaudinn, for reasons to be pointed out later, to *Treponema pallidum.* Although Koch's postulates have never been fulfilled there is no longer any doubt of the etiological relation of *Treponema pallidum* to syphilis.

The parasite of lues has, in general, the morphological characteristics of the genus *Spirochaeta.* Of these, the chief is the spiral arrangement of the body. *Treponema pallidum* is long—6 to 15 micra, sometimes as long as 25 micra—and very thin—0.25 micron in diameter. The spirals are numerous, close and very regular. Unstained, the organism is very slightly refractile, so that it is seen with difficulty. It is actively motile, moving either directly backward or forward. This direct movement may be, but need not necessarily be, associated with a rotatory movement. The spirals remain fixed during rest, but wave-like undulations may pass from one end of the body to the other. These three forms of motion—progression, rotation and undulation—are indications of rather high specialization of the body protoplasm. The organism stains with difficulty and but faintly, and even in the stained condition is difficult to see. Schaudinn used the mixture known as Giemsa's stain. Several other stains have since been recommended as staining more rapidly. My own experience leads me to still prefer Giemsa's stain.

From the more common spirochaetae *Treponema pallidum* differs in that most of the former are much thicker, with fewer, larger, flatter and more irregular spirals. The spirochaetae stain much more readily than the syphilis parasite and with Giemsa's stain take a blue rather than a pink color. Of organisms which may be confused with *Treponema pallidum,* one, which is rare, is found in the syphilis-like disease yaws or frambesia tropica;

another, *Spirochaeta dentium,* is a common inhabitant of the mouth cavity.

While there is no doubt of the relation of *Treponema pallidum* to lues, there is still some controversy as to the biological position of the parasite and of the spirochaeta group. Schaudinn at first considered the syphilis parasite a true spirochaeta. This genus, of little biological importance since its discovery by Ehrenberg in 1838, at once became the subject of much research and we now know that several of its members are of importance as pathogenic organisms. Work by Schaudinn and others showed that typical members of the genus *Spirochaeta* have no flagella, but do have spiral undulating membranes, such as are found highly developed in the protozoan genus *Trypanosoma.* In this membrane are highly differentiated myoneme or contractile fibrils. In some of the larger spirochaetae the nuclear apparatus is considerably more complex than is the case in the ordinary bacteria. The biological position of such spirochaetae, that is, spiral organisms with undulating membranes and some of them with a complex nuclear apparatus is quite clear. They are certainly protozoan cells, apparently closely related to the trypanosomes and certain other species of flagellates. Whether all the species at present included under the spirochaetae are true members of the genus cannot be determined without further research. Close study of the syphilis organism by Schaudinn showed that each end is drawn out into a fine, flagellum-like process and that no undulating membrane can be detected. In other words, the lues parasite is morphologically different from the true spirochaetae. For this reason Schaudinn proposed the new genus *Treponema.* Since the organism is not a spirochaeta there has arisen question as to whether it belongs among the *Protozoa.* Points which speak in favor of its animal nature are the complex motility and the longitudinal division. But whether *Treponema pallidum* is a protozoon or a bacterium is not nearly so important as that it is the cause of syphilis. Possibly it may have a somewhat indefinite, intermediate position between the vegetable and animal kingdoms, standing between the spirilla of the *Bacteriaceae* on the one hand and the spirochaetae of the *Protozoa* on the other.

It is difficult to speak of the syphilis parasite without paying tribute to the genius of Schaudinn. Had it not been for his acuteness of vision we might still be looking for the cause of lues. Bear in mind that he was a zoologist, and that the discovery of

Treponema pallidum was perhaps the least of his achievements. Bear in mind further that much of his purely zoological work will have bearing upon certain lines of future medical research, and that his work upon malaria, amebic dysentery, ankylostomiasis and syphilis stands as a very high type of medical investigation. His death at the early age of 34 years has delayed the solution of a number of problems until there shall come another as gifted as he—and up to the present that one has not yet appeared upon the horizon. I trust that I may be pardoned this eulogistic digression—perhaps it is out of place upon this occasion—but such great promise for advancement did Schaudinn's genius hold out that I cannot help but feel that praise of him by medical men is never untimely and never out of place.

The most fundamental advance which can be made in our knowledge of any infectious disease is the discovery of its cause. The etiological agent being unknown we can expect little that is scientifically exact and rational either in treatment, diagnosis or knowledge of pathology. In the case of syphilis the discovery of *Treponema pallidum* was a tremendous step forward. Next in importance, for an understanding of the pathology of the disease, was the elaboration of a method for demonstrating the organisms in the tissues—a technical procedure for which Levaditi deserves chief credit. By the use of the silver impregnation method the relation of the parasites to the lesions can be investigated. Study of the localization of the organisms in the tissues is necessary to an explanation of the way in which the lesions are produced, that is, such study is essential for gaining an insight into the pathogenesis of lues.

The lesions of the primary and secondary stages of the acquired disease may vary greatly in naked eye appearance. As inflammatory processes they are all subacute in nature, that is, they are characterized by the absence of polymorphonuclear leukocytes and by the presence of infiltrated lymphocytes and of proliferated cells.

The typical chancre is a localized and well defined lesion, with slow development and progress. Beginning with reddening, it later becomes raised and indurated, then undergoes more or less necrosis and finally heals. The striking characteristics of the primary lesion are its sharp definition, its induration and its indolence. When the initial infection occurs elsewhere than in the genital region the chancre may be atypical in that its margins are not so sharply defined, the hardness is not so marked or so easily detected and necrosis may predominate, so that an irregular, dirty and relatively deep ulcer results.

In the skin lesions of the secondary stage there occur changes strikingly like those seen in the chancre. The reddened macule gives way to the raised and more or less indurated papule, which in turn becomes changed into a pustule—and the latter may heal with the formation of a pigmented scar. Of course, all the secondary skin manifestations of syphilis do not always show this definite succession of changes, nor are the individual lesions always so well defined. The reasons for such changes and variations as occur are to be sought partly in the nature of the syphilitic process and partly in the nature of subacute inflammation in general. In the latter process, no matter what its cause, it is to be borne in mind that at least two kinds of change are occurring at the same time, namely, lymphocytic infiltration and tissue cell proliferation. These two processes may vary independently in degree, so that one lesion may show great richness in lymphocytes, whereas another of the same age may show a predominance of proliferated cells. One lesion may be smaller, shotty and markedly indurated; another larger, less well defined and more raised. Furthermore, in addition to the variations produced by the degree of infiltration or proliferation, the necrosis or cell death which occurs in the lesions of syphilis may also vary.

Such, in general, are the changes which occur in the primary and secondary lesions of acquired lues. What is the mechanism of their production, and what the explanation of variations met with? These are the interesting questions, and they are the ones to which the Levaditi silver impregnation method is giving us answers. That the vessels play an important part in both the primary and secondary lesions has long been known, but there has been considerable argument as to whether the lymphatics, the venules or the arterioles are primarily involved and as to the exact nature of the involvement which does occur.

The primary lesion must be considered a local infection by *Treponema pallidum*. The number of infecting parasites which gain entrance may, of course, vary and there may also, perhaps, be variations in virulence or in individual susceptibility—factors which must have some effect upon the lesion produced. It is probable that the number of organisms which initiate the acquired form of the disease is small. Arrived in the subepidermal tissue, the first result of their presence would seem to be a mildly stimulating one to the tissues. The capillaries become dilated and the cells, more particularly the endothelial cells of the lymphatics and capillaries, in the neighborhood of the parasites become swollen. An infiltration by lymphocytes intervenes early —the chancre begins to take on its characteristic induration. With the multiplication of the parasites the endothelium of the arterioles and venules becomes swollen and proliferated and about the inflamed vessels lymphoid infiltration may be particularly marked. The result is an interference with the circulation of the inflamed tissue—much the same sort of change as is produced locally by the typhoid bacillus. The necrosis which occurs in the chancre would appear to be due largely to this circulatory disturbance. Of course, a direct destructive action of the parasite cannot be excluded and very probably plays some part in the death of cells. It is known that *Treponema pallidum* is a cell parasite, and the intracellular localization of the organisms must have an adverse influence upon the infected cells. Necrosis and active inflammation cease when newly formed capillaries begin to penetrate the chancre from the periphery.

When a sufficient number of parasites has resulted from multiplication in the primary focus the secondary skin lesions make their appearance. These are the result of the transportation of the organisms by way of the circulation and the capillaries of the corium first give evidence of involvement. Vascular dilatation results in the roseola—an active capillary congestion which may be quite diffuse. With the localization of the organisms in the terminal capillaries the well defined macule appears. The changes here are the same as those which marked the appearance of the chancre—distension of capillaries, swelling of endothelium and beginning of lymphoid infiltration. The succeeding alterations are also like those of the initial lesion. With increased infiltration and cell multiplication the macule becomes transformed into the papule. And in the latter, when the vascular involvement has reached such a degree as to interfere with the circulation, necrosis occurs. The opaque, yellowish appearance of the syphilitic pustule is due to necrosis, not to purulent infiltration. An exactly similar transformation of papule into pustule occurs in the other, the small form of pox, variola. The relation of the necrosis to the vascular involvement may be so definite as to leave little room for doubt. I recall a series of sections through an early pustule. In these the small, superficial area of necrosis has the blunt wedge shape of an infarct. At a point corresponding to the apex of the wedge is an arteriole whose lumen is obliterated because of the swelling and proliferation of the endothelium and whose wall is infiltrated and surrounded by lymphocytes.

The gumma, the manifestation of the tertiary stage of acquired syphilis, is the lesion about whose specific microscopic nature much has been written. The developed gumma shows a necrotic, caseous center, a periphery composed of lymphocytes and fibroblasts and a margin made up of older connective tissue. I do not believe that such a structure has anything which is absolutely characteristic of syphilis. While it is true that similar lesions in human beings are rarely encountered except in lues, foci of exactly identical appearance and structure are fairly frequent in the tissues of lower animals. In acquired syphilis one rarely sees the earliest stages in the formation of the tertiary lesion. In congenital material showing miliary gummata one can determine that the tertiary lesions of the internal tissues have the same mode of formation as the primary and secondary lesions of the skin. Here again the first change is swelling and proliferation of the endothelium of a capillary or an arteriole. About the vessel the fixed tissues multiply, lymphocytes appear and, finally, when the vessel has become occluded, necrosis occurs. Following this early central necrosis the inflammation spreads peripherally, caseation progresses rapidly, fibrous tissue is formed, and the relation of the lesion to the vessel is lost. This latter group of changes, the ones which produce the typical gumma of tertiary lues, cannot be considered specific of syphilis. The miliary gumma once initiated by the localization of *Treponema pallidum* the further changes are the result of the reaction of the tissues to the primary inflammation rather than to the continued multiplication of the parasites. The latter disappear almost completely from the gumma at a comparatively early stage. While the gumma has long been considered pathogologically specific there has been considerable doubt as to its infectiousness. This doubt was not set aside until experimental work showed that the inoculation of gummatous material in monkeys resulted in the production of a primary lesion. For successful inoculation, however, large amounts of material are required. The infectiousness of the tertiary lesion is further proved by the demonstration of *Treponema pallidum* in gummata, and the relatively slight infectivity of gummatous material is explained by the very small number of organisms present.

In the newly born infant syphilis may produce the classical complex of pathological changes with which you are familiar and one does not hesitate to make a diagnosis of lues if the lungs, liver and spleen show diffuse inflammation characterized by connective tissue proliferation and lymphoid infiltration and if the advancing ossification lines are irregularly thickened. I wish to insist, however, that exactly similar alterations in individual organs may occur not due to syphilis. A chronic interstitial pneumonia, not to be distinguished microscopically from a true pneumonia alba, occurs with considerable frequency in marasmatic infants. Increase in the stroma of the spleen is not at all uncommon. Bone lesions, like those which occur in congenital syphilis, may be met with in rachitis, in osteogenesis imperfecta and in chondrodystrophia fetalis. Chronic interstitial inflammation of the liver, pancreas or kidneys not due to syphilis is rare but does occur. The histological diagnosis of congenital lues is not, then, so simple a matter as is generally believed. If all the organs and tissues mentioned are involved at the same time a diagnosis of lues is justifiable, but there is considerable chance for error if the diagnosis is based upon the presence of change in any one of two organs. The microscopic diagnosis of hereditary lues is further complicated by the fact that cases rich in treponemata may show none of the changes that are usually considered characteristic of the disease. In the matter of the histological diagnosis of congenital syphilis one may err, therefore, in two directions: firstly, in basing the diagnosis upon inflammatory changes which are not necessarily specific; and secondly, in failing to reconize syphilis in those cases in which the presence of the specific parasite in large numbers is not associated with an inflammatory reaction. These two possibilities of error are to be avoided by the use of the silver impregnation method.

The pathological picture presented by congenital syphilis differs from that of the acquired disease. The explanation of these differences and of the absence of tissue changes in certain cases becomes apparent if the nature of the infection in the infant is borne in mind. In a paper published last year, (*) based upon the study of a rather large series of fetuses and infants, I came to the conclusion that neonatal syphilis as one knows it—that is, infants born either dead or alive during the latter half of pregnancy and showing evidence of lues—cannot be considered a germinal infection. The evidence—the nature of the tissue involvement and the large number of parasites which may be present—is indicative of placental infection occurring after conception and is against infection of either spermatozoon or ovum. As our knowledge of the actual agents concerned in the causation of the infectious diseases has increased the number of such diseases which may be considered truly hereditary has become more and more restricted. Syphilis is perhaps the only one in which it is still supposed that the paternal sins may be visited upon the progeny by way of the sperm cells. I am convinced that even syphilis must be removed from this category. This perforce brings up the question of the interpretation of Colle's law. Concerning the correctness of Colle's dictum—that the mother who gives birth to a syphilitic infant is herself immune to the disease—there can be no doubt, but there has always been room for question in the matter of the interpretation of this fact. On the one hand, granted the occurrence of germinal infection, there is the possibility that the mother derives her immunity from the fetus without herself ever having been actively infected; per contra, if the fetal infection occurs by way of the placental circulation it must follow that the mother herself was the bearer of treponemata in order that infection of the fetus might occur. The latter seems to me to be the more actual interpretation of Colle's law. In other words, the immunity of the mother of a luetic child is an active immunity resulting from an attack of the disease. Work with the Wasserman reaction shows that such mothers give positive reactions in practically every case. While this is not absolutely evidence against the possibility of the acquisition of a passive immunity from the fetus, I am inclined to believe that it is a further point in favor of the statement that the mother of a luetic child is herself infected.

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*The Numerical Relationship of *Treponema Pallidum* to Certain Pathological Types of Congenital Syphilis. *Jour. Inf. Dis., Vol. VI, 1909, pp. 17-37.*

Bearing in mind the hematogenous nature of the infection in neonatal syphilis the mode of production of the resulting lesions is more easily understood and it is seen that the same basic process underlies both acquired and congenital lues. In the latter condition the infection is much heavier and the organisms are introduced directly into the circulation in relatively large numbers instead of being secondarily transmitted by the circulation from the primary focus in which multiplication has occurred, as is the case in the acquired disease. Such a mode of infection results in the production of diffuse and widespread tissue reaction rather than of limited foci of inflammation due to a smaller number of organisms. In neonatal lues, as in the acquired form of the disease, the first change which results from the localization of the parasites is the involvement of the terminal vessels. The endothelium becomes swollen, the perivascular tissue proliferates and lymphocytes make their appearance in the interstitial tissues. These are the same inflammatory phenomena which initiate the chancre, the cutaneous syphilide and the gumma. In the infant the resulting pathological process differs from that occurring in acquired syphilis because the fetal infection is much more diffuse. Furthermore, lymphoid infiltration is rarely so marked in the congenital as in the acquired form of the disease. Because of the lesser infiltration of the inflammatory tissue there is not so complete obliteration of vessels; hence, necrosis is not so marked. That, however, miliary foci of necrosis and even widespread areas of caseation may occur in congenital lues is a matter of fact.

To the naked eye and under the microscope the lesions of the primary, secondary and tertiary stages of acquired syphilis differ from each other and from those of congenital lues. In spite of the many pathological variations which the syphilitic inflammatory process may show I believe that they all have in common some fundamental characteristic, that every manifestation which can be considered a part of the actual syphilitic process has at bottom the same primary tissue reaction. This basic reaction, the essential thing in the pathology of syphilis, is dependent upon the localization of *Treponema pallidum* in and about the smallest vessels and consists of endothelial hyperplasia, perivascular proliferation and lymphoid infiltration. Although all the lesions of syphilis have this similarity in the beginning, after the process is once initiated the vascular inflammation, the tissue proliferation and the lymphoid infiltration may vary independently in degree; necrosis may become more marked and widespread, as in the gumma; and the inflammatory process may become very diffuse because of the widespread localization of the parasites, as occurs in congenital lues. It is the combination of these factors in varying proportions that gives to syphilis its protean pathology.

No matter what the nature of the well developed lesion may be it began with the localization of *Treponema pallidum* in minute vessels. This is followed in every case by the reaction upon the part of the blood and lymph vessel endothelium and of the tissues adjacent thereto. In its pathogenesis syphilis, whether acquired or congenital, is a vascular disease. The involvement of the vascular system has long been recognized and much has been written concerning the nature of the changes produced in the vessels. Leaving out of consideration the involvement of the smallest vessels, the vascular system may show: (1), generalized, diffuse sclerosis; (2), areas of diffuse, subacute inflammation, a process which, when it occurs in the arteries, is known as the mesarteritis productiva of Chiari; or (3), better defined, nodular areas having the structure of gummata, a condition which, when it occurs in the walls of arteries, is known as the mesarteritis luetica of Heller. The mode of production of the two latter types of vessel inflammation is readily enough understood if we bear in mind that the wall of a vessel is a tissue having in the adventitia and outer portion of the media a supply of capillaries and lymphatics such as other tissues have, and that it is through these that the infection of the vessel wall takes place. The capillary and lymphatic involvement following the localization of the parasites, causing in the arteries either the mesarteritis productiva of Chiari or the mesarteritis luetica of Heller, is the same process as the one which initiates the syphilide of the skin or the gumma of an internal organ in acquired lues or the diffuse interstitial inflammation of neonatal syphilis. If the number of parasites is small and their localization in the outer and middle zones of the vessel wall remains limited the circumscribed gummatous arteritis of Heller results. If the number of organisms is larger and if their localization in the capillaries and lymphatics of the adventitia and media is somewhat more widespread there is produced the diffuse arteritis of Chiari. Both of these types of vessel inflammation, when they occur in syphilis, are the effects of the presence of *Treponema pallidum*—they are directly due to syphilis. I do not believe that the same conclusion will hold in regard to the generalized diffuse arteriosclerosis which may occur in lues. The latter is not an essential or actual part of the syphilitic process. It is no more the result of a widespread localization of *Treponema pallidum* throughout the walls of all the arteries than the diffuse arteriosclerosis which may follow an attack of typhoid fever is the result of a similar localization of *B. typhosus*. It may be the result of the obliteration of so many of the terminal vessels or of toxemia or of both these factors combined, but it is not the effect of syphilitic arterial inflammation. The types of arteritis with which the names of Heller and of Chiari are associated *may be* specific; the generalized, diffuse, sclerotic form of arteritis *is not* specific.

The relation of the so-called parasyphilitic diseases, tabes dorsalis and dementia paralytica, to syphilis is much the same as that of arteriosclerosis to lues. Neither shows any inflammatory reaction which can be considered the result of the localization of *Treponema pallidum*. No matter whether or no either can ever occur without a previous attack of lues, neither has the pathogenesis of such lesions as are produced by the syphilis parasite. But that they are, in very many cases at least, the indirect results of lues, just as is true of diffuse arteriosclerosis, appears probable.

In conclusion, it seems safe to state that the discovery of *Treponema pallidum* has already been followed by an increase in our knowledge of the pathology, the diagnosis and even the treatment of syphilis. We know more concerning the pathological histology of the disease than we did and have more exact information as to the way in which the lesions of syphilis are produced. The finding of the specific parasite in smear preparations or sections renders possible a certain diagnosis—certainly an important advance. The early recognition of the luetic nature of a suspected primary lesion and the excision of the latter ought to be of advantage in the eradication of the disease through treatment. And, finally, if the recent advances made by Ehrlich in the chemotherapy of lues prove to be as well founded as appears probable, it is well to bear in mind that they would have been impossible without our present knowledge of the nature of the parasite of syphilis.

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EDITORIAL

Paradiamidodioxyarsenobenzoldihydrochlorid.

Be not afraid, reader. In spite of the title we would not, even if we could, make this a disquisition upon the complex nature or the wonderful nomenclature of the compounds which have resulted from the industry and ingenuity of the organic chemist. Nor yet is it to be supposed, if mention of the benzol ring should inadvertently creep into what we have to say, that we are dealing with corrupt politics. Rather, we wish to deal with the latest, and from present appearances the most brilliant achievement of what has been termed specific chemotherapy.

The word, which alone makes a sufficiently long title for this, is the name of the chemical compound better known under the popular designation of "606." The many thousands of cases of syphilis in which it has been used have yielded results which permit a certain amount of summarization.

The results obtained in the experimental immunization of animals against the action of ricin and abrin formed the basis of Ehrlich's side-chain theory. To the original relatively short and simple chain many links have since been added. Whether all or most of the many modifications and additions which Ehrlich's theory has undergone shall ultimately prove to be correct in every detail makes little difference. More important is the fact that the theory has been a most fruitful working hypothesis and that by slight modifications which do not at all invalidate the basic elements of the theory later additions have been made concordant and harmonizing elements of a very complex whole.

In the union of host cell and bacterial cell it is evident that both cells have at least one kind of receptive mechanism in common. In addition, both may have other receptors in common, so that both might, for instance, assimilate the same kinds of food substances. Furthermore, the host cell may have its own specific receptors permitting it to unite with bodies which cannot enter into combination with the bacterial cell, and the latter may in turn have specific mechanisms by which it may combine with substances which can have no effect upon the host cell. In the terminology of Ehrlich those substances which enter into combination with the host cell alone are spoken of as organotropic, while those which unite only with the invading cells are parasitotropic. "606" is not the result of purely accidental manipulation in the chemical laboratory, nor were its therapeutic effects empirically discovered, as was the case with quinin in malaria. The drug is the result of a long series of brilliant, well planned and preconceived investigations whose aim was the preparation of a substance that would be specifically parasitotropic rather than organotropic in syphilis.

Ehrlich's first labors in specific chemotherapy, as opposed to specific serumtherapy, concerned the preparation of compounds which would destroy trypanosomes in the body of the host. Believing that the differential staining of cells, just like the taking of food substances, is the result of union with dyes by means of specific binding mechanisms, he first worked with the benzidin colors. Several dyes were prepared which would destroy trypanosomes in the circulating blood but their action was not very certain. While Ehrlich was working with the benzidin colors it was empirically found that the organic arsenic compound, atoxyl, was useful in the treatment of trypanosomiasis. It was found to have beneficial results also in syphilis.

Atoxyl then became the basis of the investigations which resulted in the preparation of "606." When Ehrlich began his work the exact chemical structure of the former compound was not even known. It had been considered a body in which the arsenic was loosely combined with the benzol ring by substitution of one of the hydrogen atoms of the amid group of amidobenzol or anilin. Had such in fact been the case further work with atoxyl might have been balked because the loose union of arsenic with the benzol radical might have interfered with the manipulations that became necessary. Work by Ehrlich and Bertheim showed, however, that in atoxyl the arsenic is firmly bound directly to the benzol ring and that the union is strong enough to permit the greatest variety of manipulations. Hundreds of substitution products were prepared and tried, the vast majority of them having almost as well marked organotropic as parasitotropic properties. The term "606" is used, not because that designation is particularly euphonious nor because the eminent Doctor Humphrey has been in the habit of numbering his so-called specifics (*vide* the newspaper advertisements of Humphrey's 77 for epidemic influenza, etc."), but because it was the six hundred and sixth compound prepared.

Ehrlich's work upon the specific therapy of syphilis was greatly aided by the discovery of *Treponema pallidum* and by the establishment of the fact that the intratesticular inoculation of syphilitic material into rabbits results in a specific lesion rich in treponemata. All the requirements for exact experimentation were now at hand and the parasitotropic action of the various compounds upon the syphilis organism could be tried. Hata showed that a single injection of "606," if of sufficient size, causes the complete immobilization of the treponemata in the testicular lesion of the rabbit and the rapid resolution and complete healing of the lesion. Nichols has shown that insufficient doses do not destroy all the parasites and that relapses follow in infected rabbits. The use of "606" in human cases of syphilis has shown that within 24 hours after a single injection all the superficial lesions may be free of treponemata. Clinicians have used such words as "magical" and "marvelous" to describe the very rapid healing which the lesions of lues undergo after the administration of the drug.

The marked parasitotropic action of "606" established, much work was necessary to fix the dosage for human beings and to determine whether a dose large enough to kill all the parasites has any evil effects upon the host. Work with atoxyl and the benzidin dyes in the trypanosomiases showed that after repeated injections these drugs lose their efficacy—the trypanosomes develop an immunity which is transmitted to succeeding generations of the organisms. To prevent such an occurrence in syphilis Ehrlich has insisted that the initial dose of "606" should be large enough to destroy all the parasites. The drug has not yet been placed upon the market because Ehrlich has wished to retain control over its use—he has very properly looked upon those thousands of cases, in which "606" has been used, as laboratory experiments. The dosage, the best method of administration and the limitations to and the dangers of the use of the drug once experimentally established it will undoubtedly be readily enough obtainable.

One hesitates to give free play to the imagination—the possibilities opened up by Ehrlich's latest line of research are almost unbelievable. Specific chemotherapy will apparently yield the greatest results in the treatment of the protozoan infections. In protozoan cells, because of their greater complexity, specific binding mechanisms would seem to be more highly developed than in the bacteria. To leave out of consideration the future development of substances specific for other parasites, "606" alone means the theoretical possibility of the eradication of a disease of whose widespread distribution we gain some idea from Osler's statement that "there are probably more families with a luetic than with a tuberculous taint." We use the words "theoretical possibility" advisedly. From possibility to actuality is a long journey, even if the way lies plain and clear before us. Diphtheria could be eradicated by universal immunization with diphtheria antitoxin, small-pox could be made to disappear from off the face of the earth by universal vaccination and typhoid could be annihilated if we would only become civilized enough to be prevented from defecating into our own drinking water—but none of these diseases is as yet ready to be placed in a museum of overcome and forgotten ailments. Because of the results that it has already yielded in the treatment of syphilis "606" is important. It is very much more important because its preparation came from researches most brilliantly planned and most thoroughly executed—and that is the sum and substance of genius. Paradiamidodioxyarsenobenzoldihydrochlorid, because of its actual value and of the experimental work which produced it as much as because of the name, becomes another of the arguments unanswerable by those misguided humans who glory in the self-conferred appellation of antivivisectionists.—O. T. S.

Improvement in Ohio Milk Production.

A recent trip among the dairies which supply Cleveland with milk showed conditions of great interest when taken in comparison with those noted in the same area some ten years ago. On the former visit the conditions seen made it a matter of wonder that any decent milk could reach the city, so deplorable were the arrangements from a sanitary point of view. From notes taken at the time it appears that the milk house in practically any form was non-existent, except on an occasional model farm; that there was practically no control of the condition of the containers, either at the farm end or the distribution end; that the condition of the stables was the old type, with mud floors, as few windows as possible, as little air as might be, and as many cows as could be crowded into the space. The manure either remained on the floor, or was thrown through the window or door, remaining there a long time, and the cows at the time of milking were usually in a filthy condition. At present, in the dairies which sell milk to Cleveland consumers either directly or through a middleman, regulations have been enforced which have made an astonishing change in the appearance of the farm, in the manner of handling and consequently in the character of the milk supplied. The general rules adopted are those of the United States Government, and include among other things the need of a cement floor, proper drains immediately behind the animals for the collection of the manure, with regulations for its removal after each milking, proper provision of light and air for the cows, and prevention of overcrowding. In addition there are rules regarding the testing for tuberculosis, the use of pure water, the provision of a milk house with adequate cooling apparatus, the cleanliness of the attendants, and other matters. The inspections are made by the City Dairy Inspectors, and the dairies are rated on a percentage basis, on the Government principle, the rating being changed from time to time, as conditions are altered. In the dairies visited it was clear that active efforts were being made to keep up the standard, the inspectors were greeted courteously, admissions were freely made that the farmer was so well satisfied with the improvements that he did not see how he had previously got along without them, and the general spirit was one of openmindedness and willingness to do the best possible.

It is of equal interest with the facts of improvement to note how the changes have been brought about. While it is of course impossible to legislate directly about these matters in farms which are in other counties, the point was covered by city ordinances which excluded milk from dairies which did not reach the standards required by the city. Farmers desiring to sell their milk to the Cleveland trade were required to allow inspection, and to make such improvements as the inspectors required, on penalty of having their milk refused admission. Dairies were rated on a percentage basis, and those below a certain figure refused. At first in their more or less natural lack of appreciation of the bad conditions, the attitude was fairly universally one of resistance and anger, but the tâct of the Chief Inspector and his assistants, their efforts to explain *why* these changes were desirable, and how they would be ultimately profitable at length showed results. City milk and cream contests under government supervision, with prizes for the best milk and the best dairies, simple talks with the producers on present and possible conditions, and the showing of the iron hand when other means failed, have brought about a radical change in the way the problem is met. One hears frequent questions as to the date of the next contest, regrets that the last came at such a time that the farmer was unable to enter, and anxiety to be present at the next. It is of course true that there are still many dairies and farms where these conditions do not obtain, that there are still farmers who look on the inspector as an unqualified nuisance, and that even in the best places there are matters which may technically be condemned, but the tact of the inspectors and their efforts to bring about improvements at such a rate that the farmer can handle them without bankruptcy are making progress constant. All this was for the benefit of Cleveland, but the ultimate result shows how such activity can extend. As a natural sequence of the rulings here, all farmers who did not agree to the conditions set down and were excluded, sold their milk in other towns, until it finally dawned on these communities that they were being made a dumping ground for unsatisfactory milk. The question was agitated for some time and has finally culminated in a combination of a number of cities, including Pittsburg, Akron, Lorain and Cincinnati. Columbus and Indianapolis also are anxious to become connected with the movement. The Health Departments of these towns have agreed on the basis of a discussion of their several codes that milk refused by one city will not be received by any of the others. The immediate result will be that all the cities in the areas covered will be forced into a similar refusal for the same reason, and it is of course possible that others on the periphery of the circle will also come in, with infinite possibilities. In Ohio, at any rate, if the agreement is adhered to, it will soon be impossible for any farmer to sell milk unless the conditions on his place are at least fairly good, and the improvement of the general milk supply will be very marked. It is an excellent example and will doubtless be followed elsewhere. The most encouraging thing about the whole affair is that so many of the farmers are beginning to take an intelligent interest, for it is a truism that the results obtained by law alone are never comparable to those obtained through the cooperation of the producer. R. G. P.

Medical Education.

It is interesting to note the attention which the lay press is giving to the problem of medical education. It would seem to mark the beginning of an awakening to the fact that the physician is a very important factor in the body politic and his proper equipment a very vital subject. Therefore, it is a subject upon which the public should demand some information. Few people outside the profession realize that the status of medical education today is any different from what it was in the old days of proprietory schools, courses of lectures and preceptors.

Recent numbers of the Atlantic Monthly contained two very interesting articles by Abraham Flexner—the first entitled "Medical Education in the United States," the second on "The

Plethora of Doctors." These articles were abridgments of Flexner's report for the Carnegie Foundation and, like that report, were specific in the statement of fact and fearless in the opinions expressed. These timely articles by Flexner have been followed by a most interesting article in the Outlook, of October 1, on "How to Study Medicine," by Henry S. Pritchett, President of the Carnegie Foundation.

Dr Pritchett discusses at some length the baneful influence of the proprietory schools, and calls attention to the fact that no medical school which lives up to present standards can possibly be run on the fees received from students. This is the result of a complete change in the methods of medical education during the past twenty years. He feels that many a young man of insufficient preliminary education is induced by the lurid pictures of financial returns which these schools draw, to take up a work for which he is entirely unfitted, and warns him against choosing an advertising school. His choice should depend upon the advice of the best informed physicians in the neighborhood in which he lives. A good preliminary education is absolutely essential and no one should contemplate medicine who cannot first secure such an education. Neither should he be influenced in his choosing of medicine by the hope of financial return. "Medicine is a profession—not a business, and the man who goes into it, whether he gain a large practice or a small one, must give out much more than he receives; not necessarily in money, but in effort and sympathy and sacrifice. The man who is seeking a business which will bring him money should look elsewhere."

The medical profession in the United States is tremendously overcrowded, more so than that of any country in the civilized world. "Little towns which could support in comfort two competent practitioners are called upon to support half a dozen and this means usually a half dozen incompetent men." This question of oversupply is one which every young man entering medicine must face.

The question of medical sects is a difficult one to dispose of, but Dr Pritchett insists that there is no royal road to medicine by way of one sect or another, but that every physician in addition to a thorough preliminary training should "know thoroughly the fundamental sciences on which medicine rests. Fundamental study and preparation is absolutely necessary if you are to be an honest man as well as a practising physician."

Altogether Dr Pritchett's article is a most frank, honest and timely one. It is to be hoped that it may be universally read by physicians as well as the laity. W. B. C.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D., Cleveland.

Calomel: In the *Therapeutic Gazette* for August, Stricker Coles considers the use of calomel to increase elimination in pregnancy. He has used it with gratifying success for years for this purpose and exclusive of its other actions. The effect produced by it upon the cells of the body, effecting the proper removal of waste of each cell, as well as stimulating the cells of the liver and the kidney and so removing the excrementitious products from the blood, especially deserve consideration. This action of calomel is best obtained by giving from 1/20 to 1/10 grain three times a day, which course can be safely continued throughout pregnancy by omitting it for three or four days every two weeks. To get the best result from these small doses, it should be well triturated with bicarbonate of sodium, which increases its action and lessens the danger of salivation. He has made this method of administration a routine treatment in all pregnant cases in which elimination was deficient, as indicated by headache, slight disturbance of the digestion and diminution of solids and urea excreted in the urine. Usually in a week after beginning this treatment the symptoms will disappear, and the urea and solids become normal. Then the patient is instructed to discontinue the powders or tablets, until she again feels the need of them. In cases seen with other physicians in which other diuretics and purgatives had been administered without success, he has found the trouble to clear up within a few days on calomel alone. Calomel, however, should not be employed in large doses as a purgative during pregnancy as it cannot be eliminated freely after accumulation, and may have to be stopped before it accomplishes its work because of the danger of salivating the patient. He has had but one case of salivation, and in that instance the patient, finding her health improved on taking ¼ of a grain of calomel without soda three times a day, continued this treatment, contrary to directions, for three months. Even in this case, only slight salivation resulted without any serious effect on the patient, save that she was greatly distressed at having to forego the further use of the drug. He has never seen the slightest tendency to hasten or bring on labor from this administration of calomel, and he does not hesitate to give it even when the uterus is irritable and contracting more frequently than normal. The point he especially makes is that small doses given three times a day will act better in increasing elimination than one large dose, or small doses more frequently repeated. It will not only prevent toxemia in many cases but will do much to relieve this condition when it is already developed.

Ehrlich's Specific: Samuel J. Meltzer, in the *N. Y. Medical Journal* for Aug. 20, treats of "606," Ehrlich's newest remedy for syphilis. The great message is that Ehrlich has perfected a remedy which by one injection frees the body from the spirochaetes in less than 24 hours, and cures primary, secondary and tertiary lesions in two weeks or even in less time. Thousands of cases of syphilis have now been treated with this new remedy by many leading dermatologists of all shades of temperament and all use one term to designate the effect: it is startling, stunning. All seem to agree that one injection of "606" accomplishes more than a radical mercurial treatment for one year, that just such cases as do not respond at all to mercurial and other treatments respond promptly to one injection of Ehrlich's new preparation. The favorable effect of the remedy seems to become noticeable in a few hours after its injection. According to all reports we are confronted here with a therapeutic agent the like of which medicine has never seen before. Not only in syphilis, but in such cases as locomotor ataxia, paralysis and epilepsy as were known to be of syphilitic origin the results were gratifying. Rarely if ever has there been such unanimity of medical statements as in those enthusiastic reports over the effects of the Ehrlich-Hata preparation. The spirochaetes disappeared; primary affections lost their induration; ulcers cleaned up and were rapidly covered by epidermis; headache, periosteal pains, paralysis, etc., disappeared; the patients felt well and gained in weight—all this after a single injection and in a comparatively short time. The question of whether the cure will prove permanent need not be discussed as only the future can answer it. A large number of patients have remained cured for many months. In only a very small fraction of the cases have there been relapses and in these cases apparently the injected dose was too small. No untoward effects or complications were observed. One unpleasant complication with which many had to contend was the causation of pain which set in late, and lasted for many days. This, however, seemed to occur only when the injection was given intramuscularly in the gluteal region. Intravenous injections cause no pain. The facts as to the details of use are carefully collected and studied, but the preparation is so far distributed only among a selected class of observers with hospital facilities for a careful study of the details, which will be carefully established before the new preparation is handed over to the general practitioner. Chemically it is dioxydiamidoarsenobenzoldihydrochlorid.

Skin Inunction: Lawrence F. Flick, in the *Monthly Cyclopaedia* for August, considers skin inunction as a therapeutic measure. The skin has the power of absorption, not as one of its chief functions but secondarily and for protective purposes. The disease in which medication by skin inunction has received most general recognition is syphilis, but for 20 years he has used the inunction method in the treatment of tuberculosis and his experience with it has been most satisfactory. He has applied iodin in this way: he first used iodoform dissolved in codliver oil and olive oil by inunction and the result seemed better than any he had obtained by any other medication given in any way. Incipient cases of tuberculosis seemed to recover in a relatively short time, so short indeed that one got the impression that recovery depended on the inunctions. The one serious objection, however, was the odor, and a few years later when cresoliodid was put upon the market he found it a very satisfactory substitute for iodoform in effect, with the advantage of freedom from odor. He has since then used it in inunction as a routine treatment in all cases of tuberculosis, and like iodoform it gives striking results. While difficult to demonstrate that these results are due to the iodin, he is convinced, after a long experience with iodin inunction in tuberculosis, that it is a valuable method of treatment. Other forms of iodin than cresol iodid and iodoform can be used for inunction. Iodized oil which is much cheaper than solution of cresoliodid gives satisfaction, but does not seem to him to be as useful as the latter. Most iodin compounds are soluble in codliver oil and olive oil in the proportion of about one dram to two and one-half ounces. In essential oils, such as oil of anise, oil of gaultheria and the like, they are soluble in the proportion of one dram to two ounces. They have about the same solubility in hydrous wool-fat. In prescribing preparations of this kind an effort should be made as far as possible to make them agreeable and pleasant to the sense of smell. He uses oil of anise and oil of gaultheria in his prescriptions, and thinks it possible that these may have a medicinal influence. In recent years he has extended his inunction treatment with marked benefit to the pharynx in those cases in which there is a chronic granular pharyngitis. In tuberculosis this unhealthy condition of the lymphatic tissue of the pharynx and postnasal space, apparently due to a mixed infection of some character, occurs quite often. It is a great source of annoyance to the patient and appears to be an impediment to recovery. It is a troublesome condition which does not readily yield to treatment. He has found inunction of these parts, especially around the tonsils, with a saturated solution of cresoliodid in equal parts of oil of anise and oil of gaultheria the most effective treatment. He applies it on a little cotton, rubbing it in vigorously.

Digitalis: U. E. Henderson, in the *American Journal of Medical Sciences* for September discusses the therapeutic action of digitalis. An exact pharmacologic knowledge of the drug has been obtained only in the past few years, one of the reasons for this being the lack of an exact physiological knowledge of the action of the heart. The cardiac muscular mass, when rightly nourished, maintains an automatic activity, and the functioning of the whole heart may be influenced either by the cardiac center, through the vagus and sympathetic nerves, or by chemical changes occurring in the heart muscle. The vagus nerve carries fibers which, when stimulated, may depress each and all of the physiological properties of the heart, the most evident fact is the decrease in rhythm and contractivity. Drug stuffs may introduce such chemical changes in the muscle cells that any one of these properties is affected alone, or several of them at the same time, but not necessarily to the same extent nor in like manner. For example, in a certain stage of the action of chloral upon the heart muscle its rhythm alone is decreased, its other properties are apparently unaltered. Camphor promptly overcomes this depression and restores the rhythm. Digitalis has a much more complex action. First it has a very marked stimulant action on the cardio-inhibitory center, and on vagus nerve endings in the heart, and consequently decreases rhythm. Roughly, the higher rate above normal, the greater this effect is; while if the rate is normal, the effect is very slight or even absent. The next most important action seems to be upon the tone and contractivity of the heart muscle acting on its cells directly. The contractivity is increased and more blood in consequence is expelled at each beat. Its tone is also increased, and hence a decrease in the volume of the cavity of the heart, and decrease of dilatation if this exists. These two properties also undergo little or no change with therapeutic doses if the heart muscle is normal, while the change is very marked if the heart is dilated, conductivity is depressed. This is important for often the first sign of the cumulative action of the drug is due to this fact, and is manifested in the slow ventricular rhythm while the auricle continues to beat more rapidly (heart block). The action upon the vessels is primarily to increase their tone, and hence increase blood pressure. This action, however, appears to be slight in therapeutic doses. More recent studies have shown that it tends to dilate the coronary vessels and those of the kidney. The work of Fraser, Feist and Thomas, has shown that strophanthus contains an active principle similar in its action to digitalis, differing only in being more irritant and somewhat more rapid in its action. The advantages Fraenkel obtained in selecting this representative of the digitalis group for intravenous injection were: First, the great decrease in time between administration and evident pharmacologic action. Strophanthin given per os. usually does not act for at least 17 hours, digitalis often not for 36 hours. Subcutaneously strophanthin in just toxic doses acts in four or five hours in the rabbit, while digitalinum requires 24 hours or more. Intravenously the action is fully established in 30 to 60 minutes. Second, the certainty of absorption, both strophanthin and the glucosids of digitalis are irritant and slowly absorbed in the intestines; there is in consequence, great danger of irritation of the stomach, of increased peristalsis, and in consequence a loss of a varying amount of the dose administered. Owing to their irritant nature, administration per os. is often contraindicated. This property also makes their subcutaneous administration painful. The pain, except the skin prick, when administered intravenously is of course absent. Third, in many cases a single injection will produce as much benefit as a week's treatment with digitalis per os. In two cases a single injection completely restored broken cardiac compensation.

Dosage: Robert A. Hatcher, in the *Journal A. M. A.* for August 27, presents the variation of dosage as dependent on the method of administration. It has been said that dosage is the most vulnerable part of therapeutics, yet the one on which the healing art mainly depends, and since the correct dosage depends on the rate of absorption compared to that of excretion and destruction, it is obvious that we should have a fairly accurate knowledge of these processes: reference to the literature of the subject, however, will show that our knowledge of it is fragmentary in the extreme. While the degree of dilution has a marked influence on the toxicity of certain poisons, such as strychnin, by subcutaneous injection, this must be regarded merely as a question of alteration of the ratio of absorption to excretion and destruction. For he has found that the slow intravenous injection of strychnin permits of the administration of several times as much as is fatal when the injection is made more rapidly. He concludes that the absorption of many of the digitalis bodies and of strychnin from the alimentary canal of the cat into the general circulation is very variable. But strychnin may be absorbed at times from the full stomach quite as rapidly as from the subcutaneous tissues. Alcohol and perhaps other mild irritants favor the absorption of crystalline ouabain, from the alimentary tract. There is no general ratio of absorption of drugs from the stomach, rectum and subcutaneous tissues, and we are in urgent need of accurate observations of the rate of absorption of different drugs after various modes of administration. There is a particularly urgent need for the investigation of the various digitalis bodies.

Diet in Typhoid: Edward J. Register in the *Charlotte Medical Journal* treats of diet in typhoid fever, asserting that until recently it has been almost universally believed that the average typhoid patient can take only about two-fifths as much nourishment as is essential for a healthy individual and that this has been his experience. As age advances, certainly after 45 years, the amount of nourishment necessarily gradually decreases. He has found that without a single exception, patients between the ages of 50 and 60 cannot take more nourishment than a child 10 years of age, and that the tendency to bowel disturbances on account of dietetic errors seems to be much more common in these elderly patients. It is also common knowledge that a patient can take a great deal more nourishment when his fever is low than when it is high. After the proper preliminary treatment, and while the fever curve is gradually ascending, a patient, if his environment be satisfactory, can usually take more nourishment than during the second stage of the fever at which time the temperature is higher and there are fewer fluctuations in the curve. There is no doubt that there is a progressive weakening of digestion as the pathologic changes increase, and as the fever curve gradually gets higher. He often sees statements that in this disease a continued high temperature does not materially interfere with the ability to digest a large amount of food, and he believes that there is much that is unwise in this drift of opinion. We have no ideal food for the typhoid patient, neither have we any one food that will suit every case, so that we have to select the food that seems to be the most proper for the individual. Speaking generally, he believes that milk in some of its forms is the best diet. He takes the position that the most favorable symptom in typhoid fever is constipation, and if milk produces this state, which it unquestionably does in some cases, he considers this circumstance is for the best. Not more than one-half glass of sweet milk should be given at any one time, and this should be sipped from a teaspoon to avoid forming large curds. The fault is not with the milk, but with the defective manner in which it has been given. In his opinion a person of ordinary weight will find a half glass of sweet milk every three hours when he is awake, sufficient nourishment. For several years he has combined sweet milk with a good lithia water, and in many cases he substitutes sour milk or butter milk for sweet milk, as more palatable, many patients preferring it. He has found in certain patients that evidences of bacterial putrefaction, when sweet milk was used, subsided when the buttermilk diet was adopted

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Fruit Juices: In the August number of *Therapeutic Medicine,* Geo. Dow Scott advises fruit juices in infant feeding. Appreciating the value of fruit juices in infant feeding and in infant life, he is astonished at the unwise and empiric use of drugs and medicines during the first 12 months after birth. Castor oil, calomel and other medicines should be given at this period for a very short time, and only in very small doses. In fruit juices we have an ideal laxative as well as an ideal antiscorbutic. He begins by giving cooked fruit juices to the nursing infant, soon after birth if necessary, and continuing their use until the mother's milk shows a proportional amount of proteid, carbohydrate and fat and the normal development of the infant is assured. The use of the fruit juices can be pushed according to the desire, the stools of the infant, the amount of urine excreted, and the general condition of the infant: long after the infant is well the juices can be continued as an efficient mild tonic. Efficient as these juices are to the nursling, they are even more valuable to the bottle-fed infant. Malnourished infants suffering from various disorders are brought back to health with the aid of these juices and a proper modification of milk. In infants suffering or convalescing from bronchopneumonia, lobar pneumonia and other diseases, fruit juices are well borne: They also favor digestive assimilation of foods, the diuretic action of the kidneys, and the cleansing of the enteric tract.

Physostigmin: In *American Medicine* for August, W. C. Abbot calls attention to the uses of physostigmin or eserin. Physostigmin is the best remedy for flatulence due to intestinal paresis, and for intestinal torpor. It has been used recently to clear the bowels before and after operations on the abdominal cavity with excellent results. Sagerson reports its use in two cases of fecal vomiting. In one it acted well, but the patient was too far gone for recovery. In the other "the change was wonderful," and recovery ensued which was attributed mainly to this remedy. Subboten found it useful in fecal impactions, giving it with atropin to combat intestinal inhibition, and strychnin to incite the nervous centers. Physostigmin is a valuable remedy for intestinal torpor, and if not misused in too large doses plays an important part in curing this condition and the many ills dependent thereon. In treatment of the morphin habit, Waugh has obtained decided benefit from physostigmin in cases in which the pupil is dilated after the morphin has been stopped but only then. The alkaloid so completely replaces morphin then, that the patient can not detect the substitution. Yet this effect can be secured only from doses of not above gr. 1/100 twice each 24 hours and the relief does not endure more than an hour after each dose; it then affords an interval of perfect peace. Experiment has shown a decided antagonism between physostigmin and atropin on the one hand and pilocarpin on the other. Either of these might be utilized in cases of poisoning, but atropin is preferable. Since physostigmin is a remedy that acts so speedily, and is so quickly eliminated, it is especially well suited for the intensive method of dosage, a minute dose being administered every 10 to 30 minutes until the exact desired effect has been secured.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph. G., Ph. D.

Ergot Derivative: Barger and Dale (*Pharmaceutical Journal,* through *Chemical Abstracts, 4,* 2182) have isolated a third active principle from ergot. It has the formula $C_3 H_3 N_2 CH_2 CH_2 NH_2$, is a histidin derivative and acts on the uterus and not on the blood vessels.

Ergoxanthein: W. T. Wenzell (*American Journal of Pharmacy, 82,* 410) gives a résumé of the complex chemistry of ergot, with special purpose of emphasizing that Kobert's cornutin and Barger's ergotoxin is nothing else than ecbolin isolated by Wenzell in 1864; while the alkaloid ergotin announced at the same time is the same as Tanrets ergotinin. That the latter products are purer than those isolated by him in 1864 the author is ready to admit.

The rest of the paper is given to the description of a new principle, ergoxanthein. This is a yellow uncrystallizable solid, insoluble in water and chloroform, soluble in alcohol, ether, benzene, acetic ether and amyl alcohol. It resembles lutein and exhibits a characteristic absorption spectrum. It is not the same as the pigments isolated from ergot by Zinnin, Uffelmann, Tichomirow, Dragendorff and Podwyssotzki. The principle is obtained from fluidextract of ergot by mixing same with 95% alcohol, evaporating the filtrate, taking up residue with water, shaking out with chloroform and then with ether, the ethereal layer on evaporation gives the ergoxanthein. The yield is about one-quarter of one per cent. Physiologically, the principle increases the blood pressure.

Medicinal Plasters: A lengthy and interesting article on plasters is contributed by F. B. Kilmer to the *American Journal of Pharmacy (82,* 416). After an historic introduction, the writer discusses the several forms of plaster bases, particularly criticising the adhesive plaster base of the present pharmacopoeia which he characterizes as a lead plaster masquerading as a rubber plaster when containing only 2% of rubber.

Essence of Pepsin: T. D. Wetterstroem (Ohio State Pharmaceutical Association Meeting of 1910) reports an examination of nine samples of essence of pepsin, found in the market, for alcoholic content, proteolytic power and milk-curdling property. While the essence of pepsin of the National Formulary contains 8.8% to 11% absolute alcohol and one teaspoonful of it will dissolve 3870 grains hard boiled white of egg or curdle two pints of milk, the nine samples varied considerably from these standards. The alcohol content ranged from 6.78% to 18.25%; the proteolytic power from 2000 grains egg albumin to 3500 grains egg albumin dissolved by a teaspoonful of the sample; while the milk curdling power of a teaspoonful ranged from nil to 32 ounces milk in five minutes. It is only fair to add, however, that the specifications on the label of some of the samples were not those of the National Formulary.

Watterstroem concluded that the recipe of the Formulary furnishes a product superior to any of the commercial samples, but at the same time he suggests as further improvements—increase of alcohol content of

18% (absolute); use of fresh calve's rennet instead of rennin; and specifying Tokay wine instead of the present elastic phrase "white wine." (Through *Druggists Circular, 54,* 457).

Preserving Volatile Oils: Those who handle the oils of the orange family know how unsatisfactory is their storage because of their growing terebinthinate through conversion of their natural terpenes to the terpenes of the turpentine group. Accident showed C. H. LaWall (American Pharmaceutical Association Meeting of 1910) that the presence of a trace of fixed oils prevents this change, and he therefore suggests adding 5% to 10% of olive oil with due statement of the fact on the label. While the fixed oil dissolves in the volatile oil, when the latter is dissolved in alcohol in making essences, the fixed oil will not dissolve and can be filtered out. (Through *Druggists Circular, 54,* 463).

Protargol Incompatibility: A prescription calling for protargol, a proprietary hydrastis preparation, glycerin and water was submitted by a subscriber to the *Druggists Circular* (*54,* 467) because a clear solution could not be obtained. The editor of the journal after investigation concluded that the incompatibility was due to some substance (likely hydrochloric acid) used in manufacturing the hydrastis preparation. Another indication of the inadvisability of mixing any chemicals with proprietary articles.

Syrup of Ferrous Iodid: In a paper entitled "Some U. S. P. Preparations" read at the 1910 Meeting of the American Pharmaceutical Association (through *American Druggist, 57,* 130) J. K. Thum speaks of the preservative action which the hypophosphorous acid, directed in the pharmacopoeial recipe for syrup of ferrous iodid, exerts on the ferrous iodid contained therein. He also raises the question whether such excellent preservation is desirable, asking whether it is not the instability of ferrous iodid that makes it so valuable as a therapeutic agent. He therefore, recommends the return to the older recipes for the syrup (without hypophosphorous acid) since the syrup will keep perfectly if kept in small, filled, well stoppered bottles. He furnishes a working formula based on his own experiences.

Stability of Blaud's Pills: Contrary to the old established belief, B. O. Leubner (*Merck's Report,* through *Bulletin of Pharmacy, 24,* 394) reports the examination of 15-year-old Blaud's pills, which on being cut open showed the green color characteristic of a ferrous condition. He therefore concludes that unstable Blaud's pills mean lack of skill or knowledge on the part of the manufacturer.

Fatal Prescription: A recent fatality in the east affords several lessons both to physicians and to pharmacists. A prescription, poorly written, calling for "Laxol" with the signa "as directed," was dispensed by a drug clerk as lysol with resulting death of the infant for whom the laxative was intended. No stronger argument against "convenient and simple" proprietary names in contradistinction to the "cumbersome" official names, need be given than the recital of the facts stated above. (Editorial in *Practical Druggist, 28,* 57).

Book Reviews.

Medical Electricity and Roentgen Rays. By Sinclair Tousey, A. M., M. D., Consulting Surgeon to St. Bartholomew's Clinic, New York City. Octavo of 1116 pages, with 750 illustrations, 16 in colors. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $7.00 net; half-morocco, $8.50 net.

There are so many medical books of doubtful worth being put on the market nowadays by various publishers, or by the authors themselves if necessary, that the appearance of one of real value is a pleasant surprise. The quiz-compend type of medical literature (?) foisted on the profession with the apology that it is intended for those medical men who wish to master the practical phases of the subject, but have not the time to read theories and details, is just as useless as it is vicious, in electrotherapeutics as well as in other branches of medicine. The real reason for existence is usually to advertise somebody or something and the reading matter resembles the testimonials that make the publication of so many religious (?) weeklies profitable. So it is a pleasure to acknowledge that Dr Tousey has done a real service in placing before us a broad, conservative treatise on medical electricity and Roentgen rays, a subject which, to be handled properly requires thorough scientific knowledge and extensive medical experience.

The author has started at the beginning of his subject, the nature of the various forms of electricity and the mode of their production. The descriptions are complete and lucid. The definitions are accurate and are complemented with excellent illustrations and explanatory diagrams. The physiologic and therapeutic effects of applications of electricity, high-frequency currents, and the x-rays are thorough, scientific, and up-to-date.

The methods of treatment suggested are rational and useful, and the statements as to what results may be expected under various conditions are conservative. In short, the book has those characteristics of accuracy, thoroughness, and conservativeness that are necessary in all textbooks, and especially necessary if the subject be one in which so little instruction is given in most medical schools as in electrotherapeutics at the present time.

The chapters on Roentgen diagnosis are very good and many valuable suggestions are given on the interpretation of radiographs, a most important function of the Roentgenologist. The radiographs are very satisfactory, considering that even the best of plates appear blurred and indistinct when reproduced in halftone.

Dr Tousey has the weakness common to many authors, of referring frequently to, and recommending warmly, the various appliances and equipment invented by himself. Most of the apparatus thus referred to is very good, the poorest, perhaps, being the radiating cellular diaphragm of which he is particularly proud. This diaphragm divides the field to be examined into sections, giving sharper details, of course, but not enough to compensate for the shadows cast by the diaphragm itself, frequently, one should imagine, upon the most important parts of the plate. The needless repetition of exposures that might result would not be commendable.

A chapter devoted to the need and methods of protection to the Roentgenologist himself from the baneful effects of continued exposures and of careless use of the fluoroscope would have added much to the completeness of the book.

Altogether the work is very satisfactory. It is as up-to-date as is possible in a science that is being so rapidly developed, and will prove very useful as a systematic textbook of medical electricity and Roentgenology.

G. F. T.

Pathogenic Micro-organisms, including Bacteria and Protozoa. A Practical Manual for Students, Physicians and Health Officers. By William H. Park, M. D., Professor of Bacteriology and Hygiene in the University and Bellevue Hospital Medical College, and Director of the Research Laboratory, Department of Health, New York City; and Anna W. Williams, M. D., Assistant Director of the Research Laboratory. New (fourth) edition, thoroughly revised. Octavo, 760 pages, with 196 illustrations and 8 full-page plates. Cloth, $3.75, net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

In a book by the Director and the Assistant Director of the Research Laboratory of the Department of Health of New York City one expects to find, among other things, authoritative statements concerning the actual status and real value of diagnostic bacteriology. It is this side of the subject which gives the volume a rather distinctive position and in the present revision the most recent advances in the value of antimeningococcic serum, in the etiology of poliomyelitis and in other equally important subjects receive proper mention. In calling more particular attention to the information conveyed by the summaries showing the results of work in Dr Park's laboratory we have no wish to lose sight of the general excellence of the book. The methods of the bacteriological laboratory, the cultural characteristics and the pathogenic relationships of the bacteria, practical disinfection, hygienic bacteriology and the relation of bacteria to the industries receive, not exhaustive, but succinct and sufficient treatment. It may be held that certain matters, the bacteriology of hog cholera, for instance, are not treated with enough fullness. In a book which is to be a working aid in the laboratory the briefest possible mention of such subjects as are largely of purely theoretical interest suffices. For fuller information the student should be referred to original articles and to larger reference works.

Part III consists of 122 pages devoted to the protozoa. It gives, within its limited space, a good enough survey of the pathogenic protozoa. It cannot, of course, take the place of such books as Calkins' "Protozoology" or Doflein's "Protozoenkunde." In so few pages the general biology of the protozoa cannot receive even the brief exposition that would give medical men the information that they ought to have. Thus, the importance of chromidia in the vegetative activities of the cell should give the paragraph "Chromidia" (p. 524) more than nine lines. Such information as is given is valuable and, in these days, essential.

No book can be absolutely perfect—and this axiom applies to the present volume, valuable as it is in general. There are a number of small—perhaps one ought to say minute—faults, which one would rather ascribe to carelessness than to a lack of familiarity with the best biological usage. The article "the" is used before specific names with such monotonous regularity as to be almost annoying. There is woful lack of uniformity in the use of italics for names of species, of capitals in the names of genera and of parentheses about the names of the discoverers of new species. It is rather difficult to follow the mental process which permits the occurrence, all upon one page (p. 569), of "spirochaeta," "spirocheta," "spirochetae" and "spirochetes." While there may be some grounds for personal preference in the spelling of so troublesome a word as spirochaeta (although zoological usage precludes such individuality) we would prefer that the writer choose something and stick to it. If Ehrenberg, the originator of the word, spelled it with a diphthong and a final "a," whereas Doflein uses the diphthong and a final "e," the medical writer may have some excuse for a certain amount of confusion—but it is too bad to make confusion any worse confounded by the employment of at least four variations of one poor word. Another example of this same kind of logic, in a case where zoological terminology does not enter: if "hemorrhagic septicemia" (p. 422), why "hemorrhagic septicaemia" (p. 427) or "hemorrhage septicaemia" (p. 428)? If the shortness of life makes it advisable to elide the first letter of a diphthong, let's do it in every case—let's be impartial and consistent. The adjective, protozoan, is still used as a noun, although not so frequently as in the previous edition, and similar misuse of sporozoan occurs on page 589.

There are several mistakes in the spelling of men's names. The Tizzer of page 580 is the same gentleman as the Tyzzer of page 614. Mühlens is not triplets, although his name appears properly in the index and upon pages 574, 580 and 583, as Muhlens on page 571 and Muhlins on Plate II. Lambl, in 1859, described the organism known as *Lamblia intestinalis.* The following year he noted the presence of amoebae in the intestine, but he did not alter his name to Lamdl (p. 533). In the bibliography on page 568 there occur in succeeding lines Mac Neal and Macneal.

Other misspellings may be considered oversights in proofreading: "*Bütschlü*" (Fig. 15, p. 18), "*Treponemo*" (p. 569).

Book reviewers, to receive their just deserts, ought to be the recipients of considerable contumely upon the part of both publishers and authors. In the present case such criticisms as we have made do not at all affect the real value of the book. We have laid aside the volume, not with the feeling of lofty scorn that the professional critic may be supposed to have, but rather with one of considerable enthusiasm. Because of the arrangement and wealth of information so concisely given, the book can be unhesitatingly recommended to the student as a most helpful adjunct to his laboratory work. To the physician who wishes to revise his knowledge upon important points that he has forgotten or never knew, the volume will also be valuable, because of the summarization of recent advances.

For the mechanical essentials which go to make up a book—paper, illustrations, binding and arrangement of type—the publishers deserve much credit. O. T. S.

A Treatise on Diseases of the Eye. By John E. Weeks, M. D., Professor of Ophthalmology in the University and Bellevue Hospital Medical College, New York. In one octavo volume of 944 pages, with 528 illustrations and 25 full-page plates. Cloth, $6.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

The author states that it has been his design in preparing this volume "to produce a treatise on ophthalmology that will enable the undergraduate in medicine to obtain a sufficiently comprehensive and trustworthy knowledge of the subject, a book to which the practitioner of medicine may refer for information regarding questions concerning the eye, and also a book which may be of use to the specialist in ophthalmology." The result is a large volume of 900 pages which it has been a pleasure to examine. The work is unusually complete and is thoroughly modern in its general conception, in its pathology and in its treatment. The descriptions, as for example, in the chapter on operations, are clear and concise and yet sufficiently full in detail that they are valuable to the beginner and suggestive to those of more experience. The book gives evidence throughout of having been written by one who, as we well know, has himself had large experience, and is of real value in giving the views of such a person, a quality conspicuous by its absence in some textbooks, which suggest scissors rather than brains. Some chapters have been written by other persons, as for example that upon the general principles of optics by W. N. Souter, that on movements of the eyeball and their anomalies by Alexander Duane. The book is freely illustrated throughout and the paragraphing, with the use of different sizes of heavy and other type, makes it particularly easy of reference. The publishers' part is well done. The book can be heartily recommended to students and ophthalmologists. Undoubtedly it will take its place as one of our very best textbooks on the eye. W. E. B

Nephrocoloptosis. A Description of the Nephrocolic Ligament and its Action in the Causation of Nephroptosis, with the Technic of the Operation of Nephrocolopexy. By H. W. Longyear, M. D. With 88 special illustrations and a colored frontispiece. C. V. Mosby Company, St. Louis, Mo.

This monograph, as the title indicates, emphasizes the coexistence of coloptosis with almost every case of nephroptosis, the association of the two conditions being explained by the existence of a definite band of fibrous tissues extending from the lower pole of the kidney, where it merges into Gerota's and the fatty capsule, downward to be inserted into the posterior wall of the ascending colon and cecum or, on the left side, the descending colon. This tissue, which the author terms the nephrocolic ligament, has not previously been definitely described. He noted its presence during an operation and further investigation showed that it was practically constant and that it was responsible for dragging down the kidney in cases of descent of the cecum and ascending colon or, more rarely, of the descending colon. The poor results of many nephropexies are explained by the author as due to the failure to secure this ligament in the wound. The technic of his operation of nephrocolopexy is, briefly, to isolate this ligament through an incision in the loin, and after replacing the kidney to draw the slack of the ligament in a loop out of the wound and to suture it externally to the transversalis fascia at the normal level of the inferior pole of the kidney. This procedure, which resembles somewhat a modified Alexander operation upon the round ligaments of the uterus, not only fixes the kidney in the normal position but also draws up the cecum and ascending colon to their normal level. The book is very thoroughly illustrated, the anatomical relations of the parts and the various steps of the operation being very clearly shown. The latter half of the book consists of case reports illustrating the employment of the operative measures advised.

W. H. W.

A Manual of Hygiene and Sanitation. By Seneca Egbert, M. D., Dean and Professor of Hygiene in the Medico-Chirurgical College, Philadelphia. New (5th) edition, thoroughly revised. 12mo, 508 pages, with 97 illustrations. Cloth, $2.25, net. Lea & Febiger, Philadelphia and New York, 1910.

In the revision of this textbook a successful attempt has been made to bring the reading matter up to date without increasing unduly the size of the volume. As in the previous editions the essentials of the subject are put concisely, and in a readable manner, making the book a very useful manual of hygiene. R. G. P.

A Textbook on the Therapeutic Action of Light. Including the Rho Rays, Solar and Violet Rays, Electric Arc Light, The Light Cabinet. By Gorydon Eugene Rogers, M. D., formerly Demonstrator of Anatomy in the University of New York City. With original illustrations. Published by the author.

A preface, an introduction, 318 pages of text, and an index, all of which has been written, illustrated, and published by the author; and illuminated with a beautiful colored plate showing tuberculin diagnostic reactions, comprise the contents.

Practically the entire book is devoted to a description of the new panacea, the R, Rho, or Rogers' ray, which if properly employed, will cure most known diseases and greatly alleviate the rest.

The "new force" discovered by the author emanates from an incandescent lamp, of some six hundred candlepower, not potent of itself like that of Aladdin, but made so by the author by an arrangement "by which the angularity of the rays of light . . . are changed to produce and project . . . nonparallel beams crossing each other in sufficient numbers to form one or more very brilliant spots" which not only penetrate but pass entirely through the tissues, not even bone producing a shadow when exposed to them.

These spots do the work. They cure everything, i. e., almost everything, from "Salt Rheum" to syphilis, and judging by the results in the cases reported, the author ought to create quite a field for the sale of the wonderful Rogers' lamp. G. F. T.

Handbook of Electrotherapeutics by William James Dugan, M. D., Lecturer on Electrotherapeutics at Jefferson Medical College, Philadelphia; Physician in charge of the Electrotherapeutic Department and Assistant in the Out-patient Neurological Department of Jefferson Hospital; Fellow of the American Electrotherapeutic Association, F. A. Davis Co., Philadelphia.

The author has endeavored to present a "clear, modern, exact, and concise work," treating of the selection and uses of electrical apparatus. He covers briefly the various kinds of electrical energy that can be utilized in the diagnosis and treatment of diseases. He purposely omits a treatise of Roentgenology, and considering that one of the plates labeled "Radiograph of Wrist" happens to be that of an ankle, and in another a large arrow points to a normal epiphysis as though to an interesting fracture, it is just as well that he refers us to special works on that subject.

The author succeeds very well in telling the reader "how to select electrical apparatus," showing a complete outfit of Victor apparatus, and Campbell coils, practically every illustration bearing the label of either of these concerns. An index to their catalogues would have saved the cost of reproducing the plates.

The book is another of that multitude of medical books that have appeared on the market, and for whose existence no adequate reason can be found. W. C. H.

Syphilis. Its Diagnosis, Prognosis, Prevention and Treatment. By Thomas Pugh Beddoes, M. B., B. C., F. R. C. S. Eng. Surgeon to the London Hospital for Diseases of the Skin; Registrar at London Lock Hospital, etc. Crown, 8vo., cloth, 230 pages. Price, $2.00 net. Paul B. Hoeber, New York. 1910.

The date of the author's preface in this hand book is 1908 while the date of publication is 1910. As a result the book is not revised to date in that it does not mention any of the recent advances made in diagnostic methods, notably the Wassermann and Noguchi reactions.

The arrangement of the chapters is poor; sections on pathology are dispersed in chapters on treatment. The portion of the book devoted to treatment is excellent. The work, however, is sketchy and incomplete, and contributes nothing new to the literature on syphilis. H. L. S.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Vol. III, The Eye, Ear, Nose and Throat. Edited by Casey A. Wood, C. M., M. D., D. C. L., Albert H. Andrews, M. D., and Gustavus P. Head, M. D.

The year book on diseases of the eye, ear, nose and throat of the Practical Medicine Series is a well compiled volume and contains much of value and interest to the general practitioner, as well as the specialist.

Under physiology of the ear Bryant, Shambaugh and Wilson discuss various theories of tone perception. C. J. Blake also gives some interesting observations on the method of exfoliation of the skin of the external auditory canal. Vaccine therapy has been used with considerable success both in external otitis and otitis media. Jacobs reports interesting cases of this character. Tivnen urges earlier operation in cases of mastoid involvement, emphasizing especially the greater danger in delay.

The more exact methods of diagnosis as applied to diseases of the inner ear receive in the present volume space and attention more commensurate with the recent advances made in this subject. The preceding volume had little to say concerning this.

Mosher discusses at length the subject of septal deviations and Green makes an interesting contribution to the subject of sunken nose, reporting two cases in which fresh septal cartilages were transplanted with excellent results. The subjects of submucous resection, atrophic rhinitis and enucleation of the tonsils are reviewed but little of anything new seems to have been contributed.

The book as a whole gives a very excellent general idea of the progress made in the several specialties and is quite up to the well known high standard of these volumes in the Practical Medicine Series.

W. B. C.

Nursing, in Diseases of the Eye, Ear, Nose and Throat. By the Committee on Nurses of the Manhattan Eye, Ear and Throat Hospital. J. Edward Giles, M. D., Surgeon in Eye Department; Arthur B. Duel, M. D., Surgeon in Ear Department; Harmon Smith, M. D., Surgeon in Throat Department. Assisted by John R. Shannon, M. D., and John R. Page, M. D. With chapters by Herbert B. Wilcox, M. D., Attending Physician to the Hospital and Eugenia D. Ayers, Superintendent of Nurses. W. B. Saunders Company, Philadelphia and London, 1910.

The book is well edited and well written and certainly seems to fill a long felt want. The average nurse though well trained and competent in general medical and surgical nursing is often at a loss when called upon for assistance in specialties; both to her own embarrassment as well as the annoyance of the specialist. To her, this little volume ought to prove a great help. It contains much that such a nurse ought to know. Furthermore the subject matter is so presented as to be readily understood and assimilated by those readers for whom it is intended. The illustrations ought to prove quite as helpful as the text. While recommending the book most highly in general, we cannot but feel that the subjects of hemorrhage following tonsil and adenoid operations has been dismissed too briefly. A serious emergency might arise before the surgeon could arrive. For such an emergency the cursory treatment given in the present volume would afford a nurse but little help. We know of at least one fatal result following the use of peroxid of hydrogen to check tonsillar hemorrhage.

W. B. C.

Lectures on Cosmetic Treatment. A Manual for Practitioners. By Dr Edmund Saalfeld of Berlin. Translated by J. F. Halls Dally, M. A., M. D., B. C. Cantab., M. R. C. P. Lond,, with an introduction and notes by P. S. Abraham, M. A., M. D., B. Sc., F. R. C. I. Paul B. Hoeber, New York. 1910.

The book is quite well bound, well indexed, has adequate illustrations and five moderately good plates. It contains much valuable information on a subject usually unknown to the general practitioner —all being presented clearly and concisely. The little volume fills a real want to the busy, general medical man and is well worth his perusal, especially the chapters on Acne, and Premature Loss of Hair.

H. N. C.

Motherhood. A Manual on the Management of Pregnancy, the Preparations for and the Conduct of Labor, the Care of Mother and Child after Labor, and the Principles and Methods of Infant Feeding up to the Third Year of the Child's Life. By Hudson D. Bishop, M. D., Visiting Obstetrician, The Maternity Hospital, Cleveland. Octavo, 244 pages, with appendix and glossary. Cloth, $1.50 net. Rose Publishing Co., Cleveland.

This small volume was "prepared especially for mothers, nurses and students of medicine." Such a combination seems impossible. It may be said that most of the books designed for the instruction of pregnant women and young mothers are very faulty and unsatisfactory and contain much that is unnecessary and misleading, and much that may simply serve as a source of worry for the patient. This book is certainly not free from similar faults. Why the young expectant mother should be advised to read about such things as eclampsia, preeclamptic toxemia, placenta praevia, phlegmasia alba dolens and the like, it is difficult to understand. Yet the author urges the importance of mental quietude for the pregnant woman. As a book to be placed in the hands of the expectant mother, as its title indicates its chief object to be, it cannot be recommended. As a guide to obstetric nursing it would serve a somewhat better purpose, and should be so labeled.

A Treatise on Orthopedic Surgery. By Royal Whitman, M. D., Adjunct Professor of Orthopedic Surgery in the College of Physicians and Surgeons, New York; Professor of Orthopedic Surgery in the New York Polyclinic. New (4th) edition, revised and enlarged. Octavo, 908 pages, with 601 illustrations, mostly original. Cloth, $5.50, net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

This valuable book on orthopedic surgery is so well known that few words need be said about it. The book is substantially the same as the previous edition but, as the author himself states, new material and new illustrations have been added and in its present form, he believes that it fairly represents this department of medicine at the date of issue. The arrangement of the subdivisions by Whitman is excellent, and what especially appeals to the reader is the clearness of the illustrations, the pictures of apparatus being especially noteworthy.

The parts which have been revised for this edition are the chapters dealing with deformities of the upper extremity, congenital dislocation of the hip and deformities of the foot. The book is printed on good paper.

H. O. F.

Psyche. A concise and easily comprehensible treatise on the elements of psychiatry and psychology. By Max Talmey, M. D. Medicolegal Publishing Co., New York, 1910. Cloth, pages 272, price $2.50.

This little book, as its title indicates, is a concise and easily comprehensible treatise on the elements of psychiatry and psychology for students of medicine and law. The contents are divided into five parts: 1. Physiology of the mental functions. 2. General pathology of the mental functions. 3. Etiology of insanity. 4. Prognosis and therapy of the psychoses. 5. Special pathology of insanity. Each of these subjects is treated in a most practical manner and the work is free from the elaboration of detail that so frequently confuses the elementary student. It is full enough, however, to be a satisfactory guide to the beginner in medicine or law.

Any book that will tend to arouse interest in a subject more or less neglected in modern medical schools should be commended and this little volume possesses those qualifications. H. H. D.

A Manual of Obstetrics. By A. F. A. King, M. D., Professor of Obstetrics and Diseases of Women in the Medical Department of the George Washington University, Washington, D. C., and in the Medical Department of the University of Vermont, etc. Eleventh edition, enlarged and thoroughly revised. 12mo., 713 pages, with 341 illustrations and three colored plates. Cloth, $2.75, net. Lea & Febiger, Philadelphia and New York, 1910.

This excellent elementary book has been brought up to date in the 1910 edition by several interesting additions, such as the chapter on pubiotomy. Particularly to be commended are the clear explanations of notoriously difficult points in the text, supplemented by some really good plates. Treatment, especially other than operative, is unusually well presented. The chapter on the Jurisprudence of Midwifery should be of considerable value to the student.

G. B. F.

Obstetrical Nursing for Nurses and Students. By Henry Enos Tuley, A. M., M. D., Professor of Obstetrics, Medical Department University of Louisville; Visiting Obstetrician and Lecturer on Obstetrics to Training School for Nurses, John N. Norton Memorial Infirmary and Louisville City Hospital, etc. With 73 illustrations. Second edition, revised and rewritten. John P. Morton & Company, Publishers, Louisville, Ky., 1910. Price, $1.50.

This is a brief, but thoroughly reliable and modern little textbook, well written and illustrated. The author repeatedly cautions the nurse against taking upon herself the responsibilities that belong to the attending obstetrician. In the glossary there are a few sad errors in the suggested pronunciation of terms derived from the French.

G. B. F.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Volume IV. Gynecology. Edited by Emilius C. Dudley, A. M., M. D., and C von Bachellé, M. S., M. D. Series 1910. The Year Book Publishers, Chicago.

The authors have made a very satisfactory compilation of the recent literature upon gynecology, treating the subject under the following heads: 1. General Principles. 2. Infections and Allied Disorders. 3. Malformations and Tumors. 4. Traumatisms. 5. Displacements. 6. Sterility and Disorders of Menstruation. All possible phases of the subject are dealt with by means of abstracts of the original articles, and one is enabled to obtain a very good idea of the trend of gynecological progress. In many instances comments by the authors lend a personal note to the work and add considerably to its value. The book is well up to the standard of the series which has already clearly proved its usefulness.

W. H. W.

Acknowledgments.

The Principles of Pathology. By J. George Adami, M. A., M. D., LL. D., F. R. S., Professor of Pathology in McGill University, etc. Volume I. General Pathology. Second edition, revised and enlarged with 329 engravings and 18 plates. Lea & Febiger, Philadelphia and New York. 1910.

The Practical Medicine Series, Volume No. V, Obstetrics and Volume No. VI, General Medicine. The Year Book Publishers, Chicago. Series 1910.

The Essentials of Histology, Descriptive and Practical. For the Use of Students. By Edward T. Schäfer, F. R. S. Lea & Febiger, New York and Philadelphia. 1910.

Dust and its Dangers. By T. Mitchell Prudden, M. D. Second edition, illustrated. G. P. Putnam's Sons, New York and London.

The Story of the Bacteria and their Relations to Health and Disease. By T. Mitchell Prudden, M. D. Second edition, revised and enlarged, illustrated. G. P. Putnam's Sons, New York and London.

The Practice of Medicine. A Guide to the Nature, Discrimination and Management of Disease. By A. O. J. Kelly, M. D., Assistant Professor of Medicine, University of Pennsylvania; Professor of Medicine, University of Vermont. Octavo, 949 pages, illustrated. Cloth, $4.75, net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

Dislocations and Joint-Fractures. By Frederic Jay Cotton, A. M., M. D., First Assistant Surgeon, Boston City Hospital. Octavo of 654 pages, 1,201 original illustrations. W. B. Saunders Co. 1910. Philadelphia and London. Cloth, $6.00 net; half morocco, $7.50 net.

Dyspepsia: its Varieties and Treatment. By W. Soltau Fenwick, M. D. (London), Doctor of Medicine of the University of Strassburg. Octavo of 485 pages, illustrated. W. B. Saunders Co. 1910. Philadelphia and London. Cloth, $3.00 net.

Medical Education in the United States and Canada. A report to The Carnegie Foundation for the Advancement of Teaching. By Abraham Flexner, with an introduction by Henry S. Pritchett. Bulletin No. 4. New York, 1910.

The University of Colorado Medical Bulletin. Volume VI, No. 1. Published by the University of Colorado, Boulder, Colorado. June, 1910.

Transactions of the International Medical Association of Mexico. Fifth annual session held at Aguascalientes, Agts. January 25, 26, and 27, 1910.

Boston University School of Medicine. Thirty-eighth annual announcement and catalog. July, 1910. For announcement of optional five-years course and the six years combination course.

Transactions of the Seventh Annual Conference of State and Territorial Health Officers with the United States Public Health and Marine-Hospital Service. Washington, June 2, 1909.

McGill University annual calendar. Faculty of Medicine and Department of Dentistry. Seventy-ninth session. 1910-1911.

"World Corporation." By King Camp Gillette, Discoverer of the Principles and Inventor of the System of "World Corporation." The New England News Company, Boston.

Public Health and Marine-Hospital Service of the United States. Hygienic Laboratory. Bulletin No. 66 and 67. Public Health Bulletin No. 34 and 37.

Reprint by Dr Juan Guiteras, Director of Public Health, Habana, Cuba.

Cleveland Medical Library Association.

The following new books are to be found in the library:

Johnson's Surgical Diagnosis, 3 vol.
Hajek—Pathologie und Therapie der entzündlichen Erkrankungen der Nebenhöhlen der Nase.
Zarniko—Die Krankheiten der Nase und des Nasenrachens.
Powers and Murphy—System of Syphilis, 4 vols.
Kopetzky—The Surgery of the Ear.
Moure—Diseases of the Pharynx and Larynx.
Greef—Atlas of External Diseases of the Eye.
Veit—Handbuch der Gynäkologie, 7 vols.
Spalteholz—Anatomy, 3 vols.

Noguchi—Serum Diagnosis.
Allbutt's System of Medicine, 9 vols.
Kelly and Cullen—Uterine Myomata.
Kemp—Diseases of the Stomach.
Baird—Ophthalmic Surgery.
Dentu et Delbet—Traits de Chirurgie, Affections Chirurgicales de L'Abdomen.
Tousey—Medical Electricity and Roentgen Rays.
Webster—Diagnostic Methods.
Burghard—Operative Surgery, 4 vols.
Harvey Lectures—1908-1909.
Politzer—Diseases of the Ear.
Körner—Lehrbuch der Ohren-, Nasen-, und Kehlkopfkrankheiten.

Donated by the reviewers through the Cleveland Medical Journal:

Stevens—Materia Medica and Therapeutics.
Bandler—Medical Gynecology.
Chapin and Pisek—Diseases of Children.
Cooper—Sexual Disabilities of Man.
Albright—Rectal Diseases, Diagnosis and Treatment.
Bergey—Hygiene.
Wilcox—Surgery of Childhood.
Simon and Base—Manual of Chemistry.
Dubois—Psychic Treatment of Nervous Disorders.
Anders—Practice of Medicine.
Hare and Beardsley—Typhoid Fever and the Exanthemata.
Hill—The Body at Work.
Saxe—Examination of Urine.
Campbell—Medical Formulary.
Halliburton—Chemical Physiology.
Keen's Surgery, vol. 5.
Robson and Cammidge—Gall-Stones, their Complications and Treatment.
Onodi—The Optic Nerve and the Accessory Sinuses of the Nose.
Riviere—Esquisses cliniques de Physicotherapie.
Stewart—Pocket Therapeutics.
Monell—High-Frequency Currents.
Howell—Textbook of Physiology.
Lewis—Anatomy and Physiology for Nurses.
Hutchinson—Conquest of Consumption.
Kisch—Sexual Life of Woman.
Smith—Some Common Remedies.
Faught—Laboratory Diagnosis.
Talmy—Genesis.
Zenner—Sexual Hygiene.
Dock—Hygiene and Morality.
Swan—Prescription Writing.
Alger—Refraction and Motility of the Eye.
Cotton—Dislocations and Joint-Fractures.
Hirschfelder—Diseases of the Heart and Aorta.
McFarland—Textbook of Pathology.
Beddoes—Syphilis, its Diagnosis, Prognosis, etc.
Bacon—Manual of Otology.
Taussig—Prevention and Treatment of Abortion.
Park and Williams—Pathogenic Microorganisms.
Tuley—Obstetrical Nursing.
Whitman—Orthopedic Surgery.
Practical Medicine, Series 1909, Nos. 1, 4, 6, 8, 9, 10.
Practical Medicine, Series 1910, No. 1.

Among the recent gifts of books should be mentioned the library of the late Dr Marvin. 152 volumes.

Dr Dudley P. Allen has turned over his whole collection of medical books to the library, amounting to about 1,100 volumes. Among these may be mentioned complete sets of the following journals: Annals of Surgery, Medical Record, Journal American Med. Assoc., Archiv für Klinische Chirurgie, Centralblatt für Chirurgie, Revue de Chirurgie, Centralblatt für Gynäkologie, Annales des Maladies des Organes Genito-Urinaires, Deutsche Chirurgie.

The library of the late Dr Marcus Rosenwasser has also been turned over to the library. This amounts to about 200 volumes.

Several new Journals have been added to the list, among which may be mentioned the following, a number of which are received through exchange with the Cleveland Medical Journal: Archives de Médecine des Enfants. Bulletins et Mémoires de la Société Médicale des Hopitaux de Paris. Bulletin de L'Academie de Médecine Internationale. Beiträge zur Pathologie und Therapie der Ernährungsstörungen Stoffwechsel-und Verdauungskrankheiten. Centralblatt für die Grenzgebiete der Medizin und Chirurgie. Leharske Rozhledy. Revue D'Hygiene et de Medecine Infantiles. La Pediatria. Revue Neurologique. Orvosi Heti Szemle, folyóirat gyakorló orvosok számára (Medical Weekly Review). Upsal a Läkareförenings Förhandlingar (Transactions of the Upsala Medical Society, Sweden). La Prensa Medica, Havana. Medicinische Blatter. Gazetta Internazionale di Medicina-Chirurgia-Igiene, Napoli. L'Echo Medicale du Nord. Medical Press and Circular. South African Medical Record. Medicinische Chirurgisches Centralblatt. Organ der praktischen Aerzte, Wien.

CORRESPONDENCE—10 Pt Antique ....

To the Editor of the Cleveland Medical Journal:—

Dear Sir:—

My observations on about one hundred cases treated at my institution for alcoholism (craving for alcoholic stimulants) show that in their earlier years nearly all of these patients have been more or less restricted as regards alcoholic drinks, or rather, most of them had never touched a drop of them during their childhood, until they started at the age of 18 years or more, wishing, possibly, merely to appear as "good fellows": the alcohol, which they then took for the first time, acted really as a poison to them. Now I do not wish to advocate the prescribing of alcoholic stimulants for children, but it seems to me that people who have not been overrestricted in this respect during their childhood but who have been allowed such beverages to a limited extent during this period, become quasi immune to alcohol and will rarely experience a craving for alcoholic drinks in later years. They will always know, as a rule, when to stop and rarely contract an abnormal appetite for it. I believe my conclusions will meet with very much opposition, but still I would like to hear the opinions of other members of the profession interested in this line of work. Yours respectfully,

M. LOEWENTHAL, M. D.
2453 E. 55th St.

Medical News.

H. B. Ormsby has purchased the R. F. Smith residence at 1927 East 66th street.

R. B. Metz has opened an office at 212 Osborn building and will limit his practise to diseases of the eye.

Endowment for the Medical Department of Western Reserve University: Mr. John D. Rockefeller has offered to give $250,000 towards the permanent endowment, conditional upon the raising of $750,000 more. Of this latter sum $250,000 has been pledged by Mr. H. M. Hanna and the balance of $500,000 must be raised by December 31, 1911. This gift is from Mr. Rockefeller personally and not from the Educational Board which he has so liberally endowed and which so far has confined its attention to collegiate education without giving aid in advancing professional or technical education. The additional endowment permits the Medical Department very materially to improve its facilities for research and teaching. The high standard which the college has reached, as very well shown by the recent report of the Carnegie Foundation for the advancement of Teaching, should certainly assure the additional $500,000 for the endowment.

The Muskingum County Medical Society held its eighteenth annual meeting at the Clarendon Hotel, Zanesville, Wednesday, Sept. 14. The following officers were elected for the ensuing year: President, J. T. Davis; Vice President, W. C. Bateman; Secretary, J. R. McDowell; Delegate to State Society, H. T. Sutton; Alternate, E. R. Brush; Censor, E. C. Logsdon. After the election of officers a banquet was tendered the society by the retiring president, R. S. Bainter. The following toasts were responded to: The Doctor on His Vacation, J. T. Davis; The Pension Examiner, E. C. Logsdon; The Doctor and His Automobile, W. A. Melick; The Doctor as a Farmer, H. T. Sutton; The Auxiliary Man, G. Warburton; The Doctor in Politics, W. C. Bateman; The Medical Society, J. R. McDowell.

E. C. Brush, Zanesville, has returned from a ten days' vacation at Atlantic City.

J. T. Davis, Zanesville, returned September 1, after spending two months at Lake Chatauqua.

The Stark County Medical Society met at Canton, Tuesday, September 20, 1910. The program was as follows: 1. Sarcoma with Report of Omental Sarcoma, G. C. Goudy, Canton. 2. General Discussion—Ways and Means to Better the Condition of Our County Society. 3. General Discussion—Certain Policies of the State Society and Their Bearing on the Welfare of County Societies.

The Ashtabula County Medical Society held its fifty-sixth regular meeting Tuesday, September 6, 1910. The program was as follows: 1. Consideration in the Diagnosis and Treatment of Acute Intestinal Obstruction, C. E. Briggs, Cleveland. 2. Anesthetics, O. N. Warner, Conneaut. 3. Report of the Annual Meeting of Ohio State Medical Association, O. A. Dickson, Jefferson.

The Charity Hospital Medical Society met Wednesday, September 21, 1910. The Program was as follows: 1. Presentation of Clinical Cases: Surgical, H. A. Berkes; Medical, J. D. Osmond. 2. Report of Recent Pertussis Epidemic, N. P. McGay. 3. Pregnancy Complicated by Fibroids, Report of a Case, F. E. Sexton. 4. Infantile Masturbation, R. A. Bolt.

The St. Alexis Alumni Association met at the Hollenden, October 6, 1910. The Program was as follows: 1. The History and Use of the Pessary, J. V. Kofron. 2. Therapeutics of Diabetes, T. J. Calkins.

The Governors of the New York Skin and Cancer Hospital announce that L. Duncan Bulkley will give a Twelfth Series of Clinical Lectures on Diseases of the Skin in the Out-Patient Hall of the Hospital on Wednesday Afternoons, from November 2 to December 21, 1910, at 4:15 o'clock. The course will be free to the Medical Profession.

The Northwestern Ohio Medical Association met at Bryan, Ohio, the guests of the Williams County Medical Society, October 12 and 13.

Harold J. Morgan, formerly of Ogdensburg, N. Y., has moved to Toledo, where he has established offices in the Colton Building.

James Donnelly, Toledo, who had been ill with typhoid fever for more than a month, died the evening of September 4 at St. Vincent's Hospital in Toledo. Dr Donnelly was one of the best known and most highly respected of Toledo's physicians.

P. I. Mulholland, Toledo, was so unfortunate as to run down and fatally injure with his machine Albert Condon, a lad of 13. At the inquest the doctor was exonerated of liability.

Toledo has no smallpox, the last case having been discharged September 8, but in the first eight days of the month 41 cases of typhoid fever were reported. Investigation has shown that these typhoid infections were transmitted from wells variously located throughout the city, not from the new water supply, as was feared.

Lucas County has sold $40,000 worth of bonds for the purpose of erecting a tuberculosis hospital on the infirmary grounds.

H. H. Health and C. D. Selby, Toledo, have moved their offices to the Ohio Building.

Emily Blackwell of New York City, who died September 8, 1910, was one of the pioneer women physicians in this country, at the time when the prejudices against granting women medical education barred them from almost all the medical colleges in the land. She was born in Bristol, England, in 1826 and began the study of medicine with an instructor in Cincinnati in 1848. She applied for admission in the medical school at Geneva in 1851 only to be refused admission, although her sister, the late Dr Elizabeth Blackwell, had been a student at the same institution. Ten other colleges in succession refused her application. Meanwhile the Free Hospital of Bellevue, in New York, gave her admission to study, and, after more than a year of waiting, the Medical College of Chicago accepted her as a student. Her summer vacation she passed in hospital work at Bellevue and in the chemical laboratory of Dr Doremus. Returning to Chicago for the next term, to her surprise she found the doors closed against her. The State Medical Association had censured the college for having admitted a woman. The woman was left to shift for herself. After much delay she was received by Western Reserve University Medical College of Cleveland, where she completed her course in 1854. She then studied for two years in Edinburgh and London and upon her return she and her sister, not without much opposition, founded the New York Infirmary for Women and Children which in 1865 was granted a charter, conferring upon it college powers. She and her sister maintained a very active connection with this institution for many years and were known as leaders among women of their profession.

Deaths.

James S. Hollopeter, Houston, Ohio, died September 20, aged 51.

Louis E. Cook, Forest, Ohio, died September 23, aged 51.

Thomas A. Dillon, Dayton, Ohio, died recently, aged 53.

Frederick L. Gage, Delaware, Ohio, died September 19, aged 63.

John Troutman, formerly of Wooster, Ohio, died September 4, aged 65.

Joseph O. Lieuellen, Maineville, Ohio, died September 5, aged 36.

Eugene M. Bancroft, Southington, Ohio, died September 13, aged 42.

Jimsey H. Rogers, Louisville, Ohio, died September 1, aged 64.

Elizabeth Griselle, Salem, Ohio, died August 23, aged 79.

Katherine Kurt, Akron, Ohio, died recently, aged 57.

The Cleveland Medical Journal

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The Special Field of Neurological Surgery: Five Years Later.*

By HARVEY CUSHING, M. D., Associate Professor of Surgery. The Johns Hopkins University, Baltimore.

Gentlemen: Five years ago, at the instigation of my friend, Dr Crile, an address entitled "The Special Field of Neurological Surgery"*[1] was read before the Cleveland Academy of Medicine, of which he was then the presiding officer. Advantage was taken of the occasion to make a brief explanation—to offer an *apologia,* as it were—for the contemplated restriction of my professional activities to what appeared at the time a narrow and unpromising field of surgical endeavor. Bearing this in remembrance I gladly take advantage of your present invitation, for it gives me the opportunity of contrasting with its former barrenness the relative fertility now shown in this small acreage, where seeds, though often planted, have borne scant harvest from lack of intensive cultivation.

The reasons for this change involve certain principles of concentrated, specialized or intensive surgery to which I wish to allude at the outset. Among many of my surgical friends there exists, I am aware, a general tendency to disparage specialization; to minimize such services as have been rendered to the science as well as to the art of Medicine by those who have particularized in gynecology, orthopaedics, or genito-urinary surgery—to give some specific examples—or indeed in further subdivisions of these special fields. Perhaps we all should be "general surgeons," fitted by our comprehensive training to undertake anything in the way of an operation which the human body demands. But unfortunately this is impossible, and such an attitude often entails consequences which are not only disastrous to the patient but which also boomerang back unerringly to the ill repute of surgery, in the folds of whose mantle many overventuresome operators envelop themselves.

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*An address before the Cleveland Academy of Medicine, Oct. 21, 1910. Printed simultaneously in the Johns Hopkins Hospital Bulletin.

In a small surgical club of which I chance to be a member, made up of presumably active contributors to surgical progress, the majority oppose strongly the admission to membership, as unqualified, of such individuals as have sacrificed their general work for service in some restricted field, not realizing, I think, that they themselves were originally eligible owing to some special service which indicated excellence as an author, teacher, investigator or operator, skilled beyond others in the diagnosis and treatment of some particular class of maladies rather than of maladies in general—in other words, that at some time in his life each was an intensivist of a certain order.

Though an occasional technical stride may be made through the operative courage of a McDowell, the permanent advances are far more often the result of patient laboratory investigations, such for example, as led Hunter to ligation for aneurism, Bigelow to reduction at the hip, Billroth to intestinal anastomosis, Horsley to the first removal of a spinal cord tumor, Carrel to a perfected blood vessel suture. The real leaders of today in surgery owe their place not to any special brilliancy in operative manipulations, but to their laborious experimental investigations of certain problems of disease, whereby has been disclosed a rational mechanical basis for a surgical therapy which could then be safely and successfully adapted by their many followers. Lasting contributions in surgery, as in any other field, are certain to come only as the result of such concentration. Without it, if we do not actually go backward or stand still—as has long been true of diseases of the nervous system—the advance at best is haphazard and spasmodic.

To the contributions of one group of intensive workers we owe the fact that extreme bony deformities are now a rarity and that club-footed adults and the pitiful prototypes of Punch and Judy are no longer seen on every hand. The labors of others have made possible the amelioration, and in many cases the certain cure, of one of the most trying afflictions of advancing age—prostatic hypertrophy. And to similar specialized investigations we owe nearly all of the striking and permanent advances which have come to be applied to the treatment of disease in their special fields by gynecologist, otologist, laryngologist, ophthalmologist, proctologist and the rest.*

Nor are we by any means at the end of specialization; for this tendency is merely a sign of the inevitable differentiation of work necessitated by advancing knowledge and the introduction of new methods. Who would have ventured, twenty years ago, to predict a special surgery of the blood vessels or of the thorax sufficient to engross the exclusive attention of productive workers? Forms of pressure apparatus promise to revolutionize the treatment of many intrathoracic lesions formerly inaccessible, and meanwhile the Roentgen ray and stereoscopic plate are threatening to supplant the stethoscope of Laennec in the early recognition of diseased foci, as they have already supplanted crepitation in the diagnosis of fractures. Meltzer's experiments even suggest a possible intratracheal treatment of lobar pneumonia. Then close on the heels of the successful suturing of the peripheral vessels doubtless will come a particular surgery of the heart and aorta: and though it is a long cry from John Hunter's experiments with the cock's comb to Carrel's visceral transplantations, it requires no wild imaginings to foresee the day of transplanted organs and members. It is obvious that clinical specialization in itself is no longer sufficient for the advances that are in the making; it must go hand in hand with laboratory investigations, as has been true of the work of Kocher, Halsted, Horsley, Crile, and other notable contemporary surgical investigators.

But there is another element in addition to intensive effort which is essential to any notable advance in surgery—namely, opportunity, not only for the experimental or laboratory investigations but for the clinical application of their results. Indeed, without it, well directed efforts may be impossible. Unfortunately it is common to see abundant opportunity lead to no concentration of work; but fortunately it is only rarely that special investigations go unrewarded by an opportunity to put the results into practice. And this is true in spite of the widespread opposition to specialization on the part not only of individuals but also of many institutions.* Too often, however, even when opportunity exists, there may be wanting an inclination for research, which requires not only imagination but training, or what is too common, the inclination may be there and yet be blanketed by a deadly routine of institutional responsibilities. It is unquestionably essential to the productiveness of an investigator that he sacrifice all unrelated work to the immediate problem or problems at hand—and whether this sacrifice be justifiably continued for months or years or for the remainder of a professional lifetime, depends on the nature of the investigation and the character of the returns. Naturally a certain anxiety concerning livelihood lurks in the minds of all who are wage-earners rather than salaried individuals lest those dependent on us may suffer for this sacrifice. But all such obstacles will never effectually deter from research one who has a natural bent in this direction, and the anxiety is assuredly a groundless one so far at least as surgery is concerned, for in this branch of Medicine there are almost certain rewards for the contributor to knowledge.

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*There are large opportunities in our modern hospitals, among other surgical specialties, for a skilled proctologist who will investigate anew the common diseases of the lower bowel and finally contribute scientific procedures to take the place of our rule of thumb methods now applied to them. Important as its normal function is to the comfort and activity of mankind, the lower bowel has been abandoned as an object of special investigation for newer and less distasteful fields. Even the old saying that the chief reason for a surgical consultation is to have a rectal examination made no longer applies. Yet proctologists were among the first specialists. John Arderne, "master surgeon of the long robe," in the fourteenth century wrote an elaborate and much reprinted treatise on the homely subject of Fistula in Ano—a malady thought to be incurable before his time. In its treatment also he became expert, owing not only to his zeal but also to unusual opportunity, for it is presumable that the long hours in the saddle of the heavily armored knights of his time, with the exposure and fatigue incident to the Hundred Years' War, was a frequent cause of this particular affliction. Again, four centuries later, though cures had become not infrequent, no less a one than Percival Pott deigned to write a monograph, which passed into many editions, on this, surgically speaking, still important theme.

But is it less of individual skill in this or that direction that I speak, for this is largely built upon experience: it is rather of the pathfinder's tendencies to enter new fields. Nor can one blaze a new trail and continue on the old path at the same time: this is too much of a straddle for present day surgery. One skilled in work on the alimentary canal and its appendages may set a broken leg abominably: and the orthopaedist would often make a relatively poor showing in the treatment of a pyloric stricture. Nor should either attempt to do what he has either forgotten or has never learned.

Our rapid approach to a new order of things in Medicine has been pointed out by many, and the fact must be faced, particularly by the present general surgeon and general practitioner, whose daily wage is noticeably shrinking through prevention of disease by school inspections, by boards of health, by campaigns for pure water and milk and against the "white" and "black" plagues, by district nursing, social service organizations and State hospitals for contagious and incurable diseases. The community is awaking not only to the better care for the sick afforded by large and well-manned institutions, but to the possibilities of preventive medicine, and doubtless the great physicians of the future will more and more devote their energies to preventing disease in bulk rather than in treating it in the individual. In China the physician is paid only so long as his patients remain well, and on this basis modern methods of prevention insisted upon by a wise government will some day enable him to double his livelihood. In this country, where doctors are paid, if at all, only for their attendance on the individual while ill, these methods, already being introduced, are having the contrary result.

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*The large general hospitals have been notably loath to recognize specialties, many of which have been forced to establish themselves at the outset in small institutions erected for the purpose.

But these coming changes are more apparent in their relation to the physician's than to the surgeon's activities, except in so far as the community is learning that surgical operations are necessarily safer in large hospitals, where the majority of them may come to be done in some future and more communistic time by salaried and possibly State paid individuals who are specialists in their particular lines. For the performance of surgery is elaborate, expensive and time-consuming, and its more difficult forms, such as those which I am to discuss, must be carried out in familiar surroundings with a more or less fixed and permanent staff, so that the machine runs without hitch; otherwise safety will be sacrificed. The community deserves and, when enlightened, will demand better service than the old "cut and run" methods which still prevail in many even of our larger institutions.

The ideal surgical hospital would be one whose senior appointees after a broad general surgical training would be encouraged by continuous service to concentrate their work on special subjects—as many subjects as there are men who may be qualified as pathfinders. I realize, of course, that such positions cannot be created outright and men found to fit into them. Rather it will happen that they are built around such individuals as are available and must grow in accordance with the individual's capabilities. A junior staff in the meantime should carry on the general routine work, any subdivision of which, it is true, may become special tomorrow through some unexpected discovery, and again at some later day lapse back once more into the general mill, but always, it is to be hoped, on a higher plane.

A new department may any day be justified by an unexpected discovery, which at the time may seem trifling. Chamberlen's forceps revolutionized obstetrics, the Wagner bone-flap made a new surgery of the brain, an "optical toy" of Helmholtz created ophthalmoscopy, Babington's mirror brought into being laryngoscopy, and otology received its impulse from the discovery of Eustachian catheterization. Thus not only may a demand for a new subdivision crop up at any moment, but the work of any established department may have to be entirely remodeled through a chance discovery—a new instrument of precision, a tissue stain, a serum reaction, a principle of vaccination. And the more of these discoveries there are, the more rapidly will the unfortunate and absurd segregation into two separate bodies, physicians and surgeons, be broken down. As simple a thing as the Pravaz syringe has made a surgeon of every physician who does a lumbar puncture, who aspirates the chest, or, indeed, gives a hypodermic injection: and were it not for this hollow surgical needle could we take a blood culture or administer Flexner's serum in meningitis? Physician or surgeon—it is really but a difference in the degree of surgical or medicinal dosage.*

But we continue to speak of "internal medicine" as though this were in contrast to "external medicine," or surgery. The surgeon before Lister almost of necessity was an "externist," but today the scalpel is the most satisfactory medicine for gallstones, for an inflamed appendix, a pyloric stenosis and much else internal. The tables are reversed, and the abdominal surgeon, strictly speaking, has become the "internist." Needless to say, then, he must share with the physician the same underlying knowledge of the function of the organs he treats and of the diseases to which they are liable, and must possess an equal diagnostic facility—indeed, he is likely to excel in this respect unless the physician makes a practice of frequenting the operating room.

This transformation of surgery from practices based almost wholly on an anatomical knowledge of the surface and extremities of the body, to ones based on the physiological activity of the viscera, has come rapidly, and physician and patient have both at times been hurt in the process. But it must be said of the physicians that their reluctance or hesitation to accept surgery as an oft-needed form of therapy, not only for the intra-abdominal maladies surrendered in the past, but for many intrathoracic and intracranial conditions of the present, has more often come through fear of surgical foolhardiness and its consequences than from jealousy of the surgeon's trade and ignorance of its possibilities in cautious and skilled hands. It is not to be questioned that the greatest asset of the best physicians is a full knowledge of the accomplishments of mechanical and operative therapeutics. The patient's risks are about equal between the physician who knows nothing of surgery and the surgeon who possesses no alternative but the knife.

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*There is, of course, a certain danger in the too literal acceptance of Billroth's epigram, "Die innere Medizin müsse mehr chirurgisch werden," with which I closed my former paper. Surgery must beware lest it topple from its standard of general medicine. Surgeon and physician, standing on the same basis of common knowledge, differ only in the forms of therapy they are fitted by training or by inclination to employ.

It is all a matter of taste, what one shall do with himself in the wide reaches of Medicine. As John Locke puts it, "The inclination of the mind is as the palate to the stomach, that seldom digests well, that nauseates the palate, and is not recommended by it." So the turn of mind which breeds inclination for handicraft draws one into the manual work which repels another; but for all of us the fundamental need is a basic familiarity with the principles of disease, surmounted by such superstructures of special knowledge of a few particular maladies and their treatment as we are mentally and manually capable of imposing upon it. Thus any manipulative specialty may be safely superimposed on the secure foundations of general surgery and may exist with no loss of the broad conceptions of disease essential to its permanence: without such a foundation the specialty soon becomes top-heavy, and the increasing numbers who are boosted by short cuts to the top increase its instability, until a danger sign is necessary lest the structure actually tumble to the ground and harm Medicine through its fall.

The present tendencies in gynecology serve as a familiar illustration. As the pioneers in this specialty pass, the feeling grows among their successors that the gynecological field has been worked out, and widening the boundaries of their claim through this misapprehension, they unconsciously become again general surgeons—many of them, alas, with their general surgical knowledge built upon the sands of inexperience. Men with a broad surgical training first made this field possible as a surgical specialty, but others have occupied the territory without this preliminary schooling, and finding it, as they think, a very small field, branch out, spread themselves thin, and, ceasing to contribute to its productiveness as a special field, become general surgeons of less than the average reliability. This is the top-heaviness to be avoided in specialization.

Gynecology, of course, as a special field of work has hardly been brushed, as doubtless will be evident some decades hence when the re-entry of new individuals on the old soil, with new methods, new machinery and a new spirit of investigation, will point a moral to our earlier selves. There has never been a day in surgery without those who have held that the highest attainment of the art has been reached, not only in general but also in their particular fields.

And this is the beginning of the end, I think, of all operative specialties. The specialty is the measure of the man. So long as there are individuals capable, after a general training, of working along novel lines and with the imagination for research which leads to contributions, so long will the field of their endeavors justify its being regarded as "special;" and it is almost impossible to make definite advances in one direction without permitting other work to go by the board. But so soon as progress lags and by the time others with no broad conceptions have crowded in, what was once specialization becomes properly absorbed again in general surgery, until perchance pathfinders crop up whose work brings on a new cycle.*

In no department of Medicine today is there greater promise of immediate reward or greater need of intensive surgical cultivation than exists in neurology, which so far as the possibilities of operative therapy are concerned is about in the position occupied by gynecology twenty-five years ago—the days of tincture of iodine and the glycerine pack. There is urgent need and wide opportunity for a group of men rigorously trained in general surgery, in the neurological clinic and experimental laboratory, who can serve as pathfinders in the surgery of the central nervous system—men who are not merely capable of exposing the brain and spinal cord, with full respect for the dire consequences of rough methods, but who stand abreast with the growing knowledge of the maladies to which these structures are heir. It must be obvious to all who peruse our numerous surgical textbooks or converse on the subject with general surgeons, that the surgery of the brain and spinal cord means largely the surgery of their enveloping structures; and the methods of exposure—the getting in through the bony envelopes by motors, burrs and what not, by the speediest osteoplastic methods and so on—are evidently the matter of paramount interest.

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*There are, to be sure, surgical specialties older than gynecology which have long existed, with none of these unsettling manifestations, though evidences of temporariness are by no means limited to the special gynecological field. Ophthalmology, obstetrics and orthopaedics, for example, have remained stable. It is interesting that at Guy's Hospital there was no special department until 1824, a century after its foundation, when an ophthalmic clinic was created. An obstetric department followed in 1842, and one for laryngology and for orthopaedics in 1885 and 1907 respectively. But no longer, as in the past, can the chair in any one of these clinics be held by the general practising surgeon, for it has recently been decided that specialists alone are entitled to conduct the clinics for diseases of the ear, throat, genito-urinary organs and orthopaedics, on the basis that special training and skill are necessary. On such a basis special contributions toward the advancement of knowledge may be expected.

It is often appalling to find what disrespect is paid to the enclosed structures themselves as a consequence of this attitude. At a recent meeting, at which the subject of epilepsy was being discussed, a surgeon read a paper reporting twenty-five cases of epilepsy, with an astonishing percentage of "cures," and it came up in the course of the discussion that his method of treatment was "to sweep the index finger about between brain and dura" to be sure that there were no adhesions, and, in case there were evidences of tension, to insert the selfsame instrument in various directions into the brain substance "to be sure there was no tumor." Yet none of the neurologists present expostulated or showed astonishment! In a recent consultation over a case of fracture dislocation of the spine resulting in an apparently total transverse lesion, which had been immediately operated upon without a preliminary thorough neurological study, the area of anaesthesia corresponded to a level about three segments higher than the seat of the bony lesion—a level which could not possibly have been exposed by the incision which had been made. This finding was very confusing until it was learned that the operator, who with perfect skill and excellent technique had performed the laminectomy, had inserted his finger, at the close of the operation, into the canal "to be sure that there were no spicules of bone pressing on the cord higher up."

Such an appalling lack of respect for the most important and delicate structures of the body is doubtless far from uncommon.

Instances could readily be multiplied. But the disrespect is not entirely confined to the surgeon, for the neurologist himself, having little familiarity with the hazards of surgery, may be responsible for the institution of measures as dangerous as those which the surgeon may undertake through lack of neurological knowledge. The recent suggestion, as a treatment for tabes, of peeling the pia-arachnoid from the back of the cord—as though this structure were a banana—is a case in point; and the indiscriminate puncture of the brain advocated by certain German neurologists in the hope of finding a cyst or abscess, or of removing a small fragment from which a tumor diagnosis can be made, is a measure to be put in the same category, by no means excusable merely on the ground that the nature of the malady justifies blind and dangerous measures. "The condition cannot be made much worse, therefore operate," is a surgical dogma that should be squelched with its perpetrator. It is a sadly common excuse for much meddlesome and misdirected surgery.

Let us come, after this long preamble, to our special subject of Neurological Surgery, some aspects of which I have chosen for particular comment.

THE BRAIN AND ITS ENVELOPES.

Tumors. At the time of my former paper the reaction from the discouraging views of Agnew and Bergmann had begun to set in, largely as the result of rumors of Sir Victor Horsley's brilliant undertakings in a large series of cases,* and of scattered records of occasional successful operations at other hands. Most neurologists, however, retain far from optimistic views. Nor can we wonder, when we consider the fact that Allen Starr, who with persistent courage has probably had more tumor operations done for him than any other, has recently reported what he regards as his first "cure" of a case of brain tumor—meaning not only the removal of the growth but a complete restoration to the normal with disappearance of the signs, general and local, which made the diagnosis possible.†

Five years ago tumor cases were few and far between in the Johns Hopkins clinic, and though at that time there had been no successful extirpations, we had begun to feel somewhat encouraged regarding the beneficial effects of purposeful decompressive measures. A paper written on this subject[4] was quickly followed by the citation at other hands of numerous past cases in which trepanation had served to lessen preëxisting symptoms: the principle, in other words, was an old one. That pressure relief in many instances had unexpectedly followed unsuccessful explorations for tumors had long been a matter of general knowledge, and Horsley, Wier and other forerunners in the work had been led to propose simple trepanation as an intentional palliative measure; but I am unaware that any author had previously suggested a purposeful decompression irrespective of possible tumor removal, and the utilization not only of a "silent" area but also of overlying muscle to prevent too great protrusion of the herniating brain, or had ever emphasized the importance of decompressing at a distance from the growth as a preliminary measure should the brain prove to be under great tension.

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*It is regrettable that the full record of many of these cases has never been published.

†Tumors of the Acoustic Nerve, Their Symptoms and Surgical Treatment. *Am. J. M. Sc.*, April, 1910, cxxxix, 551.

However this may be, the decompression idea caught hold, and the frequent examples that have come under our observation of misdirected surgery which results in making the patient worse seem to have been born of an apparent misunderstanding of its most essential principles. Within the past few months we have seen two tragic examples of such errors. The patients, who had removable tumors in the left hemisphere, had been subjected to an exploration over the left central and precentral regions, with removal of bone and opening of the dura—a so-called decompression. In both cases the pressure symptoms had been largely relieved by the resultant hernia, but a complete motor aphasia and contralateral hemiplegia was the consequence in each case of the misdirected measure, leaving the patients in a most sorry plight.* Particularly when localizing symptoms suggest the presence of a growth in an important field of this kind, the greatest possible precaution must be taken to insure a sufficient reduction of pressure before opening the dura over the tense brain in the immediate locality of the lesion. This may necessitate two or three preliminary measures, as illustrated by the following recent case of suspected left prefrontal tumor.

A large bone-flap, so placed as to lay bare the anterior half of the left hemisphere, disclosed a dura so tight that it seemed inadvisable to lessen the tension by a lumbar puncture. Consequently a subtemporal decompression on this same side was combined[25] with the exploration, and the bone-flap was replaced after the dura had been opened merely over the silent temporal lobe. Though considerable improvement followed this palliative measure sufficient tension persisted to make a direct exploration hazardous; hence after a period of five days a right subtemporal decompression by the usual external intermuscular method was performed. Practically all the pressure symptoms subsided as a result of the bilateral subtemporal openings, and on the tenth day after the first exploration the bone-flap was again reflected, the dura was widely opened, with only a slight degree of protrusion, and a prefrontal tumor was disclosed and removed. This procedure was followed not only by abeyance of all pressure symptoms, but also by a rapid clearing up of the disorientation and intellectual disturbances which characterize lesions in this neighborhood.

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*In one of the cases the tumor, which actually proved to be largely post-Rolandic, was removed, but the damage to the precentral cortex from the long-standing herniation was permanent.

A first-stage attempt to investigate the brain in this case would probably have resulted not only in failure to expose the growth but doubtless would have led to symptoms comparable to those in the two cases cited. Thus in dealing with a tumor associated with extreme degrees of tension,* or with a large and vascular growth, two, three or more stages may be essential to safety, however satisfactory it might be for all concerned if the lesion could be removed at the first sitting. And, needless to say, essential to the ultimate success of a performance necessitating the reopening of a large osteoplastic wound is the absolutely reactionless healing which alone is assured by a tedious, painstaking and accurate closure with early removal of the external approximating sutures[13].

We have had at this writing about 180 patients suffering from brain tumor, the larger number of them having been admitted during the past two years—namely 64 from October, 1908, to October, 1909, and nearly an equal number from October, 1909, to date. Some 250 operations† have been performed on these patients, including such preliminary measures as a subtemporal decompression for the relief of headaches and preservation of vision before localization was possible.

Blind patients fortunately are brought to us less often than was the case a few years ago, and it would be interesting to compare the figures of the first 50 admissions in this respect with

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*It must be appreciated, too, that tension is always accentuated by a badly taken or poorly administered anaesthetic, and a second stage may be necessary owing to this factor alone. Expert anaesthesia, as cannot be too often emphasized, is a *sine qua non* in these procedures. Ether, too, possibly with a preliminary scopolamine or morphia and atropine injection, remains the anaesthetic of choice, for reasons not apparent five years ago. In view of the inevitable hepatic necroses which follow chloroformization and the increased tendency to bleeding on its second administration, should one be necessary, the arguments in favor of anaesthesia by this drug in cranial operations have been greatly weakened.

†In these figures the first, second or third stage of a single procedure is not counted as a separate operation.

those of the last 50. I should judge that they would be less than half as frequent in the latter.* Allowing a patient to become blind from the pressure of a tumor which does not directly implicate the optic paths is comparable to procrastination in appendicular disease until the onset of general peritonitis. The more or less satisfactory settling of the choked disc question has been largely responsible for the betterment of these figures, and ophthalmologists are now awake to the incipient grades of this lesion which previously were overlooked or, regarded as an "optic neuritis," were considered as something unrelated to pressure. Familiarity with the ophthalmoscope is an essential to this work and, thanks to the electric attachment, the old difficulties encountered in its acquirement have fortunately been greatly lessened.

For two or three years Dr Bordley and I made repeated observations on the eye-grounds of the patients who were beginning to come to us in some number, and the conditions before and after decompression, not only in the tumor cases but in other states of increased intracranial tension, soon convinced us of the essentially mechanical nature of the neuroretinal stasis and oedema[20 21]. Similar studies have led Saenger, Hippel, Horsley, Paton, de Schweinitz, Schieck and others to similar conclusions.† An early grade of choked disc long remained the most delicate test which we possessed for the recognition of a tumor, and it was the custom to await its onset, for few ventured, five years ago, to make a diagnosis of tumor in the absence of headache and vomiting combined with choked disc.

In the course of our affiliated work routine perimetric observations were made of all suspected tumor cases before and after operation, and we found to our surprise that with great regularity a characteristic alteration occurs in the boundary relations of the color fields[28]. This shows itself as an interlacing or actual inversion of the outlines of the color fields and seems to affect blue more than the other colors—a condition long regarded as typifying hysteria. The interlacing disappears promptly, as a rule, when sufficient relief from pressure has been brought about by surgical means; and what is of greater importance than all else, the condition is often demonstrable before there is any recognizable ophthalmoscopic alteration appreciable in the retina.

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*I may, however, be too optimistic. At the present writing three patients from distant points have been admitted as follows: (1) A young man with a definitely localizable and approachable lesion had been subjected, until totally blind, to a rigorous antiluetic treatment for two years. (A temporal lobe cyst was found: he has recovered, though permanently blind). (2) A respectable woman, needing decompression for an unlocalizable tumor and whose relatives had indignantly submitted for a year to an antisyphilitic régime, has become completely blind in the process. (3) A child of five years, having had mercurial inunctions for nine months, was brought, blind, hemiplegic and unconscious. (A large subcortical cyst—degenerated glioma?—was disclosed at a second stage operation: the child has recovered, blind and hemiplegic). The Wassermann reaction was negative in all of these patients: in none of them was syphilis remotely probable.

†Horsley's valuable paper ("Optic Neuritis," "Choked Disc" or "Papilloedema." *British Med. Journ.*, March 5, 1910) should be consulted.

Six of our patients in the past year, in the total absence of a choked disc, have been subjected to operation largely on this basis; and some of our most satisfactory extirpations have been in this group. One patient had shown this change in the fields for over a year before we could bring ourselves to suggest that he was carrying a tumor, for he had never had a headache, never any dizziness or gastric upset. Mild Jacksonian attacks starting in his left foot constituted the only symptom, and yet a benign tumor—an endothelioma weighing 194 grams—was found and removed, with complete recovery. This is the largest tumor in the series that was successfully removed: two larger ones, weighing 400 and 420 grams respectively, occurred in children who had long been thought to be hydrocephalic.

In only two out of about one hundred cases examined has all tendency to color inversion been totally absent. These were both cases of supposed cerebral arteriosclerosis with aphasia and focal epilepsy originating in the facial musculature. There were no pressure symptoms whatsoever in either case, but in each an exploration disclosed a small glioma in the lower precentral area. It is to be hoped, in spite of such exceptions, that the sign may nevertheless prove of value, for anything which will enable us to make an earlier diagnosis will be of untold benefit to these unfortunates.

Brain tumors are surprisingly frequent, and the diverse maladies for which the patients in our series had been treated for years, since many of these growths are slowly progressing affairs, would be a most distressing commentary on our diagnostic guesswork—the diagnoses, or shall we say guesses, ranging all the way from gastric headache and eye-strain, arteriosclerosis, hysteria, neurasthenia and what not, to dementia, hydrocephalus and toxic amblyopia. Most common have been the diagnoses of functional disturbances insisted upon by the attendant until the pressure symptoms become full-blown, and then always the possibility of syphilis had been considered, with an antiluetic régime, which either had added to the gastric distress and loss of weight, or, what was as bad, seemed to relieve symptoms for a time, leading to an erroneous diagnosis, while the vision continued to fail. Fortunately the Wassermann or Noguchi reactions today make this diagnostic test by drugs no longer a matter which deserves discussion.*

They are ticklish performances, these operations for tumor, and demand not only a rigorous regard for detail, such as the patient's position on the table and the choice of the anaesthetic, coupled with the highest skill in its administration, but also a thorough knowledge of the diverse tricks of controlling hemorrhage from scalp, meninges and brain, with a full understanding at the same time of the cerebrospinal fluid circulation under states of tension; for this latter is really one of the keynotes of success in these difficult problems, and upon the management of the fluid hinges not only most of the pressure phenomena which the disease elicits, but also the possibility of lowering tension during the operation in such way as to allow of dislocation and wide subdural exploration. The operation, in the hands of the inexperienced, must usually end with the first protrusion of the naked brain through an open dura, and when abandoned in this way, paralyses, a separated wound, an infected fungus, meningitis and death are, alas, too common. And it must be appreciated too that the management of the cerebrospinal fluid under these circumstances does not simply consist in its withdrawal by a lumbar puncture, for one of the most frequent causes of prompt fatality in patients suffering with tumor pressure is the wedged foraminal hernia which follows this ill advised measure[19].

Our results, I am glad to say, are steadily improving with each block of cases, due doubtless to earlier diagnoses—for we now see proportionately fewer patients in the desperate terminal states of pressure—as well as to technical improvement in the various procedures, for barring such clean-cut lesions as those, for example, which constitute the group of lateral recess tumors, no two patients present exactly similar problems. In our last 100 cases, over a period of 18 months, there were eight operative fatalities in the first 50 and only three in the second 50; there were only 10 extirpations or six cyst evacuations with practical cures in the first 50, and there have been 20 in the last 50. In the entire 100, therefore, there have been 30 apparent (to all intents and purposes) cures, 13 operative deaths and 67 measures which have been definitely palliative. There has been a complete absence of the old-time postoperative complications. A meningitis or fungus cerebri is almost inexcusable today.* Some of the patients subjected merely to palliative measures have since died, some have been subsequently operated upon for tumor removal, but the majority continue well, many of them earning their livelihood. Brain tumors, be it known, are almost always slow-growing affairs, the more serious kind too—the gliomas—growths which tend to undergo degenerative processes, so that if not only room is made for them but time is also allowed they can be long carried without further symptoms provided they occupy silent areas; and this is the group of cases for which palliative measures are particularly indicated. It sounds like an Irishism to say that no tumor is so favorable for operation as one which cannot be localized, and yet it conveys much of truth.

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*Confusion is often rendered worse confounded by the facts (1) that the pressure symptoms of a glioma may temporarily subside under mercury and iodide, and (2) that the fibrous gumma is notoriously resistant to these same measures. It is to be hoped that Ehrlich's new arsenical preparation will be as effective in the absorption of this form of syphiloma as it promises to be in the earlier lesions of the disease, thus obviating, on the one hand, the necessity of considering these cases as surgical, and, on the other, the protracted mercurial treatment of the present and past.

Contrast these figures with the gloomy statistics built upon postmortem examinations, with only 4% of tumor cases suitable for operation. It can be seen that there is enough surgical work among patients suffering from brain tumor alone for concentration—specialization within the field of Neurological Surgery! And without this specialization the work cannot be done well, for it is hardly a physical possibility to carry through more than one of these arduous operations in a day, nor is it fair to the patient or to the subject we are discussing to undertake such work when fatigued or to crowd such operations into the midst of a busy day of general operative surgery. Then, too, hours of preliminary and of subsequent study are demanded by these conditions, as the neurologist well knows, and the neurological surgeon must look at his subject from the neurologist's standpoint and must make his own diagnoses, just as do the better men among those who are contributing to the surgical therapy of the diseases of the alimentary canal or genito-urinary tract or pelvic organs or ductless glands, as the case may be.

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*Though it is our invariable rule to shave and cleanse the scalp on the operating table before anaesthesia, with no preliminary ward preparation, there has never been a wound infection, meningitis, or, even with the tense hernia which may form, only once has a broken wound led to a fungus cerebri.

Headaches. One by-product of the decompression idea which has aroused our interest has grown out of the striking relief from the intracranial discomforts experienced by patients with tumor, through the establishment of a subtemporal defect in bone and dura. This matter concerns those unfortunates who are constant sufferers from intractable migraine. There are many types, of course, of hemicrania and many causes for it, but in one familiar group there occurs during the attack a marked arterial dilatation of the temporal vessels accompanied by a venous congestion which is seen best in the external branches of the ophthalmic vein, but which is observable too by the ophthalmoscope in the eye-grounds. Ptosis, pupillary inequality, vomiting, slow pulse and other familiar symptoms, associated at times with a low grade of choked disc, accompany the attacks, and a number of these individuals have submitted with eager willingness to the experiment of a subtemporal decompression, which has resulted in a considerable measure of relief in most instances. What encourages us to believe that the step is in the right direction is the fact that when subsequent headaches occur there is evidence of increased tension shown by a tendency to protrusion at the seat of the defect, which becomes flat again, or even recedes, with the free interval. The seizure would seem to be brought about by some local nerve discharge acting on the blood vessels and causing pressure from a circumscribed oedema, possibly of the nature of an angioneurotic oedema. Nevertheless it must be admitted that the matter demands much longer study before it can be advocated on a sound basis of therapy.

Intracranial Haemorrhages. Possibly no one of the recent contributions to the surgery of the head has proved so simple or has been so satisfactory as the decompressive measure, whether unilateral or bilateral, as the case demands, for basal fractures[16]. This procedure has become more or less routine in our clinic, and has been put upon such a basis that it may safely be regarded as a task for the general surgeon. The same, unfortunately cannot be said as yet of the traumatic intracranial haemorrhages of the newborn nor for the haemorrhages consequent upon vascular disease in the adult. Since my first paper suggesting intervention for birth haemorrhage[3] in which four cases were reported, the opportunity has arisen to make similar attempts on 12 other infants, several of whom were in a desperate condition, extensive contusion of the brain being associated with lacerations of the enclosing structures. About half of these patients succumbed during or soon after the operation, but some have made excellent recoveries and the dreaded spastic paraplegias, which Little was the first to ascribe to these accidents of birth, have not appeared. The second of the cases described in my original report is now a healthy and normal child of five years of age. Unfortunately I have lost track of the third child, which also made an immediate surgical recovery. Several of the later patients have also done remarkably well, though in one or two of them, doubtless due to complicating extravasations in the basal ganglia, athetoid states have supervened. The surgical procedure is usually well borne—which is not surprising when we consider the inevitable trauma which nature has fitted the child's head to endure successfully even at a normal birth. But the procedure is a delicate and difficult one, and until much more can be learned regarding the late results and the best methods of procedure I do not feel that it can be widely advocated for general use.

The same applies also to the question of apoplexy. I feel that much of the damage which occurs in these conditions is due to compression from the extravasation and to secondary oedema rather than to actual destruction of important nerve paths—an explanation which also holds for the paralytic symptoms of tumor cases—and it would seem rational if we are to regard patients with cerebral vascular disease as deserving of such radical measures for their relief, to attempt the removal of the clot, even though it be intracerebral, just as we would were we dealing with an extracerebral extravasation. A note was made some seven years ago* in a Mütter Lecture of our first attempts in this direction, and since then there have been possibly a dozen cases operated upon, most of them in the terminal stages of compression. There have been one or two excellent recoveries, but whether they would have been equally satisfactory without the operation must remain a matter of some uncertainty until a much larger group of cases has been studied and a much longer interval has elapsed. Our attention has been drawn into other fields, but I

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*The Blood Pressure Reaction of Acute Cerebral Compression, Illustrated by Cases of Intracranial Haemorrhage.—*Am. J. M. Sc.*, June, 1903.

feel that any one who would devote himself to this particular subject might hope for valuable results.

Hydrocephalus. Possibly no condition is looked upon with a more general feeling of helplessness than infantile hydrocephalus, with or without the frequently combined spinal defect. That we will some day find a rational method of surgical treatment for these cases I have not the least doubt, but it is very unlikely that it will come from indiscriminate attempts at drainage for which some thirty different methods have already been advocated. The underlying factor of cerebrospinal fluid circulation must first be worked out, for it is this which is at fault; and whether there is an excessive activity on the part of the choroid plexuses or whether there occurs an obstruction at some stage between the plexus and the point of exit of the fluid from the cranial chamber, is not entirely clear.

Though we are learning much in regard to the acquired forms of hydrocephalus due to obvious obstructions, the "essential" or "idiopathic" hydrocephalus—so called because we have never thus far been able to solve its mysteries—is still most baffling. Its elucidation will only come, I am sure, to the one who clears up the development of the ependymal and meningeal spaces and who can show us the normal outlets of escape from the arachnoid. That the fluid is constantly being formed, that its main normal escape is from the subarachnoid space into the dural veins and sinuses, that it has a close association with the venous rather than with the lymphatic system, that it is a carrier of secretion elaborated by the posterior lobe of the hypophysis, that in most of these cases of "essential" hydrocephalus the fluid actually finds its way from the ventricles into the subarachnoid spaces, so that the former can be emptied by a lumbar puncture, making absurd most of the advocated methods of drainage—all this and more has been learned. Moreover, it is a well recognized fact that hydrocephalus—since it is only a symptom of disease and not a disease in itself—is found in a great variety of pathological conditions, each of which will demand its particular form of readjustment to assure the proper fluid drainage. I hesitate to say how many harrowed parents apply for surgical relief for hydrocephalic offspring, or how many of the cases have been operated upon, or how discouraging have been most of the results. Of one thing

I am convinced, that we are only at the threshold of this subject and that it is large enough to need its own specialization.

Epilepsy. Here again we are dealing with a symptom of disease, for the use of the term "idiopathic" or "essential" is again an acknowledgment of our ignorance of the etiology. Hence in speaking of the surgical treatment of epilepsy we must not overlook the fact that in an ever growing number of cases we are dealing with convulsions of recognizable organic origin, be the cortical irritant a tumor or a cyst, local vascular disease, the relic of an old inflammatory process, or a gliosis set up at the seat of an old traumatic extravasation, however minute.

With Dr Heuer, I have gone through our voluminous tumor histories with the object of determining the number of patients in this particular group who have suffered from seizures of an epileptiform character. In 130 consecutive cases convulsions were recorded in 53 (40.7%), and of these patients, 27 had typical motor Jacksonian attacks—practically the only symptom of tumor in a certain number of them, so that, as Allen Starr emphasized many years ago, these cases should always be explored on the suspicion that a cortical new growth in a removable stage may be responsible for the symptom. This in the past has applied only to paracentral lesions with motor fits; but now it is possible, thanks to Hughlings Jackson, to recognize some forms of seizure which have originated from cortical lesions elsewhere—the uncinate gyrus group of fits, for example, of which nine instances have occurred in our series. It must be realized that a lesion identical with that which evokes a characteristic Jacksonian attack when in proximity to the motor cortex, may, when situated elsewhere, elicit what appears to be a general convulsion without warning.

A lesson is to be drawn from the experience with these tumor epilepsies: namely, that the attacks, if they have been of long standing, may continue even though the growth, obviously their original cause, has been cleanly and totally removed. There is a certain basis, therefore, for the common idea of the "establishment of an epileptic habit," which means nothing more than that certain fixed alterations occur in the cortical cells which make them more liable than formerly to discharge under a certain stimulus—whether chemical through auto-intoxication, or mechanical from varying degrees of intracranial tension, or vascular through blood pressure changes. This point furnishes one further inducement to precocious explorations in incipient epilepsy whenever there exists an element of suspicion that a focal lesion due to an original trauma or infection is present.

Two years ago I summarized[14] the 59 cases of general epilepsy which I had operated upon up to that time, and stated that 50% of the patients had been so far benefited, temporarily or permanently, as to make the operation seem worth while. We have had almost as many more cases during the past two years, showing proportionately about the same degree of benefit. Just why these patients should have such a marked subjective sense of relief and so frequently a complete cessation of seizures for a time, I can offer no satisfactory explanation. In a small number of cases the operation has apparently resulted in a cure with complete abeyance of the attacks for a number of years, and this, too, not infrequently in cases which appeared to offer the most unpromising surgical risks; whereas on the other hand, many of those which, surgically speaking, were most promising have relapsed again practically into their former state.

There are many factors to be considered in an analysis of these cases, such as the preëxisting duration of the malady, the number, severity and character of the attacks, the after-treatment and environment, the lesion found at the operation and the procedure employed—extirpation, arachnoid drainage, ventricular puncture, decompression, or what not—too many factors, indeed, to justify an analysis in a general address.

Dyspituitarism. Hidden in a footnote in the paper of five years ago I found this statement, "It is not impossible that a diseased pituitary body may some day be successfully attacked"—probably I meant in the next generation. To Kipling's story of the "Night Mail" there are appended fictitious advertisements of flying machines and their accessories culled from presumptive newspapers of the year 2000. An energetic house in England in advertising their present sale of such articles has called attention to the fact that according to Mr. Kipling they are 90 years ahead of time. It would require the imagination of a medical Victor Hugo to forecast what the surgical activities even of the immediate future may be.*

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*The suggestive papers of Marburg and of Pappenheimer (*Virchow's Archiv.*, 1910) make it apparent that the pineal gland deserves special experimental investigation and may prove to be other than the mere vestigal "seat of the soul."

But much more important than the mere happening of certain successful operations for the treatment of lesions in the infundibular region which have implicated the pituitary body, is the greater fact that through these efforts and the associated experimental work diseases hitherto mysterious are beginning to be understood. Surgery here can occupy the same rôle that it played in the diseases of the thyroid gland. But surgeons should eagerly acknowledge their debt to a neurologist—Marie—who was the first to point out the association of a pituitary body lesion with a definite clinical syndrome, and to other neurologists who have led the way in throwing further light—so far as light can be thrown by clinical investigations alone—on other and correlated maladies of hypophyseal origin. Furthermore, from an anatomical point of view the hypophysis is an intracranial structure—the "brain gland" of our forebears—and doubtless its normal secretory relationship to the cerebrospinal fluid makes the gland in a way as important to neurology as its membership in the family of ductless glands renders it of importance to general medicine.

Our brethren, the rhinologists, I am told, wish to take this structure unto themselves as a partial denizen of the nose, and doubtless they can find their way to it as readily as can any others. But no matter who takes the lead and by further investigation advances our knowledge of this fascinating structure, let the clinical applications come primarily and exclusively as the result of serious experimental research, not as the chance experience of an isolated case or two of hypophyseal cyst or tumor operated upon by a single individual. Such sparring for a small prize temporarily blackens the eye of surgery, for, though he may not know it, conservative surgery is the natural opponent of the casual operator. Such was the story of brain tumors in the eighties. The men who are making aerial flight a thing of the near future are not the "spellbinders," exciting as their individual flights may be, but the men who, like Langley and the Wrights, have worked at principles.

The hypophysis and the ductless glands in general so influence the function of every organic process that they overlap into every individual specialty, and it is a free-for-all race but one beset with so many obstacles that progress toward the goal will be slow. Newton once likened the sons of men to children, who on the beach of knowledge pick up a pebble here and there, while the wide ocean of the unknown lies stretched before them. We shall doubtless have to drain it to its dregs before all the pebbles relating to any single subject will be disclosed.

It has been learned that the anterior lobe of the gland is essential to life, and that it bears a close relation to such disturbances of growth as are displayed in gigantism, acromegaly and certain forms of infantilism. The infundibular lobe, on the other hand, is closely bound up with metabolic processes, and in view of the discovery that its secretory products are present in the cerebrospinal fluid this pars posterior must take on a new importance in many morbid states closely related to the nervous system[35].

Surgically speaking, despite the demonstration that the sellar region is accessible, we are still working in a dim light, and the proved importance to life of the glandular structure which rides in the saddle must breed hesitation in the minds of those who would dislodge it offhand. As yet the surgical problems should properly be restricted to the relief of neighborhood symptoms brought about by new growths which have either originated in the gland itself or have arisen from adjoining structures. No one as yet would venture to assert that a tumor in the infundibular region can be totally removed, and inasmuch as pituitary headaches and pressure against the chiasm may be relieved by a local decompression or by the chance evacuation of a cyst, it would seem wise, for the present at least, in view of the importance of the gland, to confine operative measures in most cases to the mere removal of the sellar base with incision of the glandular capsule—a local decompression. Hypophyseal tumors which have extended from the infundibular region into the cranial chamber proper must be treated by the same rules of cerebral decompression as would be applied to any equally inaccessible lesion elsewhere.

An attempt will soon be made to correlate the clinical studies of our 20 cases of hypophyseal disease in man, with the experimental observations conducted in the Hunterian Laboratory by Reford, Crowe, Homans, Goetsch, Dandy and Jacobson. Symptoms due to a primary or neighborhood disease are often more or less obvious, but those due to a secondary implication of the glandular activity from a lesion elsewhere are a far more common sequence of intracranial maladies than is generally supposed.*

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*A note of caution in regard to the therapeutic use of hypophyseal extracts may not be untimely—particularly as their employment is being recommended for certain surgical states. Operators grasp eagerly for any blood pressure raising substance which can be employed in shock,

THE SPINAL CORD.

Meningitis. Far less that is new has been added during these five years to our manipulative therapy of lesions of the cord than of those of the brain. The temptation is to dwell on Flexner's remarkable achievements rather than on matters surgical, for his past work has resulted in the prevention of many of the surgical complications formerly a consequence of meningitis and his present investigations on poliomyelitis when carried to the end may have an even more striking tendency in this same direction. There are some sequels of cerebrospinal fever, however, which present surgical problems during the course of serum treatment or even when recovery has been brought about by its use.

It has been pointed out that all of the fatal cases die with, if not in consequence of, an obstructive hydrocephalus[17], so that intraventricular as well as the usual lumbar subarachnoid introduction of serum may be indicated. Indeed, in one of our cases, when organisms were no longer demonstrable in the spinal fluid, they were present in abundance in the distended cerebral ventricles. It is possible, therefore, that drainage of the ventricles (temporarily to the outer world, or permanently to the subdural space by the ingenious callosal puncture method introduced by von Bramann*) may be therapeutically applicable to this frequent complication. Then there are certain late disturbances which may supervene after apparent recovery—epilepsy, for example, and spinal paraplegia, both presenting problems for operative treatment. Some of our best results in epilepsy have been obtained in this group of cases, and a number of patients in whom a progressing spinal paraplegia had developed have been much benefited by a laminectomy. In some of the patients who suffered with severe pain the posterior roots have been divided, and in all of them the chronic adhesive arachnoiditis, often with so-called serous cysts has lent itself to surgical betterment. Into this same category fall the cases which have been given the sonorous name of "arachnitis adhesiva spinalis circumscripta." Oppenheim, Krause and

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as was disastrously the case with adrenalin. Pituitary body extracts which are "on the market" advertise to the unsuspecting that they occasion a more marked and more enduring rise in arterial pressure than adrenalin. Unfortunately the gland appears to contain two substances, one of which produces as marked a depressor as the other does a pressor response, and until they can be separated, therapeutic administration in cases of low blood pressure might prove most dangerous.

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*Bewerthung des Balkenstiches in der Hirnchirurgie. *Arch. f. klin. Chir.*, 1909, xc, N. 3

Horsley, among others, have called particular attention to these encysted accumulations of fluid in the arachnoidal spaces which may cause pressure disturbances akin to those associated with a new growth; and doubtless all who have performed many laminectomies for a presumed tumor syndrome have had the good fortune to encounter this condition, which lends itself favorably to operative treatment.

The acute tuberculous and pyogenic infections still waver on the borderline of surgery. It is remarkable that a tuberculous meningitis, regarded as inevitably fatal, should show so little for itself after death, for one must often scrutinize the meninges for the presence of tubercles even though the bacilli have been demonstrable in the cerebrospinal fluid during life. On the assumption that a supervening serous meningitis has been responsible for these fatalities we have drained the mid-subarachnoid cystern through a median occipito-spinal opening—an operation easily performed—with obvious temporary improvement, which, however, merely served to postpone the seemingly inevitable outcome. It is possible that a callosal perforation may here again be applicable, for a hydrops ventriculorum tends to form in these cases just as it does in the course of the meningococcus infections.

Much better results have been obtained from permanent drainage in the cases of serous (non-tuberculous) meningitis and in those of pyogenic origin. A number of patients suffering from an established general streptococcal and pneumococcal infection have recovered after the establishment of free drainage coupled with the administration of urotropin. One could wish that Crowe's discovery,* that this drug quickly finds its way into the cerebrospinal fluid, might be applied to cerebrospinal fever as an adjunct to the serum treatment. There is no doubt, however, that its chief value will be as a prophylactic measure in conditions such as otitis media or sinusitis or basal fractures in which meningeal infections are threatened. On this basis it might well deserve a vigorous trial during the only too brief prodromal stage of acute poliomyelitis, or be used as a general prophylactic in localities where the disease is epidemic, as quinine is employed in malarial districts.

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*The Excretion of Hexamethylenamine in the Cerebrospinal Fluid. *Johns Hopkins Hosp. Bull.*, 1909, xx, p. 102.

Tumor. We have had a number of cases of spinal tumor, and possibly there is no performance in surgery more interesting and satisfactory than the diagnosis and localization, followed by the removal from the spinal canal of one of the benign meningeal endotheliomata. The subsequent relief from excessive pain and the resurrection from crippledom of one of these unfortunates is chief among the things which make for optimism in neurological surgery. It is astonishing how great a degree of recuperation exists in some of these flattened cords. In one of the cases in our series of six—a woman with total paraplegia of two years' standing—the cord was found thinned to a flat band of a few millimeters, and yet she has regained almost complete control of the extremities and walks freely without crutches.

The principle of decompression, furthermore, is often as applicable to the intramedullary tumors of the spinal cord as it is to the subcortical tumors of the brain. Among a number of cases of this sort the following may be cited as a notable instance of improvement after spinal decompression.

A young woman whose symptomatic history was confused by an early poliomyelitis followed by an extreme rotary curvature of the spine, began to lose control of her legs and visceral reflexes, until the lower body was almost totally paralyzed. There were no root pains, but she suffered from severe suboccipital headaches, and the diagnosis was obscure. A long S-shaped laminectomy disclosed a tense, pale cord which, filling the canal to the complete exclusion of fluid, bulged outward through the dural opening. A longitudinal incision in one of the posterior columns revealed a columnar glioma, a portion of which was removed for diagnosis, and the laminectomy was further enlarged upward until it included eight vertebrae before the upper limit of the extreme spinal distention seemed to be reached. There were almost immediate signs of returning function, motor and sensory, and she has so far recovered as to make us regret that the posterior column was not slit throughout the entire length of the exposed and tense cord. It is possible that such a neoplasm may degenerate, as in the case of some of the cerebral gliomata, into a cystic lesion of syringomyelic nature.

There is another form of palliation which may save from much suffering those unfortunates who have a malignant (metastatic) involvement of the cord which is beyond surgical attack —namely, the deliberate transection either of the entire cord or of the posterior columns alone cephalad to the lesion. An immediate suprapubic drainage will suffice to keep these pitiable individuals clean and they may be spared months of pain of such a nature and of such severity under the usual circumstances as to so far prohibit movements of the body that bed-sores develop even under the best of care.

Trauma. In view of the recoverability of function in cords flattened by the pressure of tumors, one might argue in favor of equally satisfactory results in the case of traumatic injuries. This, alas, does not follow. On the one hand, the slow compression effect leads to a physiological "block" to the transmission of impulses, which, however, is rarely if ever functionally total, the reflexes usually being retained, while the paraplegia is of a spastic type in which spasmodic and uncontrollable movements occur. In the other case, there has been a laceration of the cord with an anatomical division of the conducting paths which makes a lesion beyond repair, and transection itself permanently abolishes the deep reflexes and gives a flaccid paraplegia.

I do not feel that on operative grounds I have anything to add to the subdivision of traumatic spinal injuries into three groups as made five years ago—the haematomyelias, the total transections and the partial transections. The first—an easily recognizable condition—should not be operated upon, as it is in large measure a recoverable lesion, which cannot be bettered by surgery and may be made worse. The second, if it can be recognized without qualification, should not be meddled with, as the condition is hopelessly beyond repair with or without surgical intervention. The third may and should be operated upon as soon as the diagnosis is made, provided the operator's experience is such as to insure no further damage to the cord in the effort to free it from pressure and relieve it from the effects of a progressive oedema.

It is possible that we cannot rely as definitely as Bastian would have had us believe, on the permanent as well as immediate abolition of the deep reflexes in cases of total transection, for there have been a number of cases recorded of total cross lesions (proved to be such postmortem) in the cervical region in which deep reflexes have returned; and I have seen two or three striking instances of similar restoration in cases which presented all the signs of totality immediately after the injury. One cannot, therefore, speak at all times with positiveness in regard to totality of transection, and final judgment on the individual problem must needs be influenced by associated circumstances. One can, however, do much for the cleanliness and comfort even of these desperate cases; and an early suprapubic cystostomy with the snug insertion of a tube through a small, widely stretched opening will usually avoid the renal infection which under repeated catheterization was formerly inevitable. Urethral drainage is far less effective. Fortunately these cripples rarely suffer physical discomfort and life may be tolerable and hopeful.

Something may be said as to operative methods in laminectomy, for an entry accompanied by rough manipulations is just as much to be condemned here as in operations on the brain. A temporary increase of preëxisting palsies is an evidence of operative traumatism, not to be excused on the basis of oedema or otherwise laid at nature's or the patient's door. The proposed osteoplastic operations are assuredly inadvisable, and I adhere strongly to the old total removal of spines and laminae. The operation is actually a very bloodless one if the incision is absolutely median and the spines and laminae are closely hugged and scraped of their periosteum. With this precaution new bony arches may almost totally reform, as we have had occasion to learn in a number of cases with secondary exposures, and the column seems to be weakened in no respect, even after an extensive removal.

Rather than saw through the laminae or chip them off with gigantic forceps I prefer, after removing the spines, to enter the canal with a perforator and large burr, introduced successively at the amputated base of each spine. The lateral fragments of the laminae can then be nibbled away with sharp-nosed rongeurs. This method of entry not only spares the operator's reflexes for the delicate work to follow, but avoids all jar to the cord. After the median extradural fat has been scraped from the dura this membrane should be incised on a director with such care as not to injure the subjacent arachnoid which bulges into the wound and through which, under normal circumstances, the contained structures can be beautifully seen as if magnified through a glass. If a looked-for tumor is not exposed a delicate filiform catheter may be readily passed upward between the dura and uninjured arachnoid as high as the foramen magnum if there is no obstruction in the canal such as would be produced by a growth. The preservation of the arachnoid and its contained fluid is desirable as an immediate aid for these primary explorations, but not for the reason that evacuation of the fluid is dangerous. We at least have never seen any untoward symptoms result from its complete outflow so long as the patient's head is not elevated; and I am inclined to ascribe the oft mentioned "spinal shock" to the loss of blood and trauma incidental to rough methods of entry rather than to escape of fluid. These spinal wounds, of course, should never be drained.*

THE PERIPHERAL NERVES.

The surgery of the peripheral nervous system, at least so far as the nerves in their extracranial and extraspinal courses are concerned, has long been a field of "external surgery," and much of our knowledge of the effects of injury and recoverability after suture dates from the past century, which has also brought down to us the tradition of perverseness which makes nerves reunite when this is undesirable and prohibits functional union when it is longed for.

Harrison's remarkable studies which were in progress at the time of my earlier paper, have since added further knowledge to the question of possible peripheral autoregeneration which was then exciting much discussion. By the further aid of experimental surgery on embryos he has succeeded in bringing the living fibre under direct observation during its early formation.† The nerve develops primarily as an outflow of protoplasm from its central cell, the end of the fibre showing a filamentous structure possessing motile characteristics which draws out the protoplasmic thread into its permanent axonal form, no other cells taking part in the process. This amoeboid property doubtless appertains to the regenerating central end of a divided adult fibre and is doubtless what leads to reunion of severed nerve in the adult, the sheath of Schwann cells of the peripheral segment possibly playing some chemotactic rôle, as experiments have suggested, in attracting the axone toward its old path, but certainly taking no direct part in the reformation of a separate peripheral axonal segment. Harrison has also shown that in certain frog larvae there may be such a thing as primary protoplasmic union of axis cylinders without degeneration. Studies such as these make far clearer our working conceptions of the processes of reunion of old or newly divided peripheral segments with their original, or, after grafting, with new central ends. The delicate amoeboid end of the newly growing axone cannot well respond to the peripheral call when an abundance of scar tissue is interposed, particularly when the tendency to its formation is augmented by the presence of bulky silk sutures. Experimental studies, however, have not as yet shown why it is that sensory fibres have a much greater tendency to reunite than motor fibres. If the reverse were true, much of our peripheral nerve surgery would be rendered easier.

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*An ingenious unilateral laminectomy has been introduced by Alfred S. Taylor, with which I have had no experience but which I should judge would leave too narrow a defect in the column for any manipulations within the canal other than the simple unilateral root divisions, for which purpose I understand the operation was devised.

†Observations on the Living Developing Nerve Fibre. *Anat. Record,* 1907, vii, p. 116.

Important additions to our knowledge of the afferent system have come from the exhaustive clinical researches undertaken by Henry Head* and his co-workers, Rivers, Sherren and Thompson. A painstaking investigation of a long series of nerve injuries which culminated in the subjective studies of the anaesthetic skin-field produced by purposeful severance of the superficial ramus of the radial in Head's own arm, led these authors to subdivide the sensory mechanism into three systems which convey impulses of (1) deep sensibility; (2) "protopathic" sensibility, and (3) "epicritic" sensibility. These studies have shed a new light on certain factors relating to sensory restoration which have long puzzled surgeons and which have either been explained on the basis of overlapping or at times entirely misinterpreted as an immediate return of function after suture. The "protopathic" system of Head regenerates with rapidity and completeness, even when the true cutaneous supply ("epicritic") remains cut off, and he regards it as one with the afferent fibres of the visceral sympathetic. This particular system is incapable of appreciating touch and slight degrees of warmth and cold; all stimuli are imperfectly localized, radiate widely and are often referred to distant parts as painful impressions. Their detailed and systematic investigations of about 600 cases of nerve injury have not only given us many important new facts but have set a standard of thoroughness which can be attained by few others. Bardenheuer's studies† of 43 cases in his personal surgical experience should not be overlooked in a review of this subject.

Nerve Anastomosis. Five years ago the first cases had just been recorded by Ballance, Faure and Kennedy of what has since proved to be the most satisfactory application of the astonishing fact that controllable impulses from given centres may come to traverse a newly established pathway to a paralyzed group of

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*The Afferent System from a New Aspect. *Brain,* 1905, Part cx, p. 1.

†Mittheilungen aus dem Gebiete der Nervenchirurgie, u. s. w. *Deutsche Ztschr. f. Chir.,* 1908, xcvi, pp. 14-224.)

muscles. No better chance for a clear-cut physiological test could have been given than the anastomosis of the peripheral segment of a paralyzed facial nerve with the central end of another motor nerve destined by nature to innervate an entirely distinct musculature. The spinal accessory had been used in the earlier operations, and in our series of 15 subsequent cases this form of coupling has been adhered to.*

From what we now know of the processes of nerve reunion we are the better able to understand the more complete and more prompt restoration of an early graft, not only because of the atrophy of end-organs and muscle bundles but because of the subsidence of the changes in the peripheral segment which presumably influence the downward projection of the new-forming axis cylinders. The most satisfactory functional results naturally follow an anastomosis made immediately after facial transection, such as may be intentionally performed in cases of troublesome motor spasm. In one of these cases[12] restoration of function began within six months and the patient has regained almost complete *emotional* control—acknowledged to be a rare outcome under the best of circumstances.

In like fashion other palsies of important muscle-fields—trigeminal, laryngeal, vesical—lend themselves to nerve grafting with a prospect of improvement in direct relation to the promptness with which the measure is undertaken. Needless to say, the same thing has long been known to be true in the case of the mixed nerves of the extremities, though here another element, that of pain and sensitiveness, comes into play—an element which may stand in the way of the vigorous postoperative measures by electricity and massage necessary to keep the muscles from too great wasting during the long wait for functional restoration. These pains are associated with the return of function in the "protopathic" system of Head, and particularly in children the extremity in which these sensory changes—

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*Purely on the speculative basis that the cortical centres for the tongue were nearer the facial centres than were those for shoulder movements, and that associated movements might consequently be lessened, the hypoglosso-facial form of anastomosis was introduced as an alternative and seems to have been generally followed of late. Associated movements, however, are the same in both instances, and the thickness of speech in one case would appear to be more disturbing than the shoulder droop in the other. I have seen a considerable number of patients after hypoglosso-facial anastomosis, none of them with results comparable to those after accessorio-facial grafting.

inevitable after severance of a mixed nerve—are going on is so sensitive as to preclude massage and electricity.

But this is not the only obstacle to functional restoration by means of anastomoses in the muscle group paralyses due to poliomyelitis. If, as we surmise, the well recognized changes which occur in the sheath of the peripheral segment represent the chemotactic influences which allure the reforming axone to its old pathway and terminal, it can be readily understood why the outgrowing fibres do not distribute themselves indiscriminately among peripheral fibres, some of which have been long degenerated and some newly degenerated as the result of the anastomosis—why, in other words, the new forming axones should discriminate in favor of the recently severed peripheral fibres which take them back to their original destination. It would presumably be necessary, in order to assure another distribution, to make the graft immediately after the onset of the original paralysis—obviously an absurdly impractical proposal.

We are still making a practice of anastomosing the ends of nerves severed in amputations, and certain unpublished experimental work lends support to the view that terminal neuromata are less likely to form under these circumstances, though, as before stated, this is trusting to the effect of negative polarity. The same measure has been applied to the nerve trunks whose terminals in old amputations have given rise to painful neuromata, with results which are in a measure promising.

Posterior Root Divisions. Intracranial as well as intraspinal root division, chiefly for painful afflictions in circumscribed skin-fields, doubtless represents a crude method of dealing with these maladies and is justified only on the ground that less simple measures are as yet unavailing. However, even these radical procedures sometimes fail in inexplicable ways, as has been largely true of root divisions for post-zoster pains and for those associated with terminal neuromata. It is difficult to conceive of a central pain set up by so-called ascending neuritis which will perpetuate discomforts referred to an area rendered permanently anaesthetic by root division. The procedure has been advocated as a form of relief for the gastric crises of tabes, and a few favorable reports of such operations have appeared. Our own restricted experience has not been brilliantly encouraging.

There is a present vogue for posterior root division as a palliative measure for the extreme spasticity of certain cerebral diplegias of the Little type, and though the valuable contributions of Förster and Gottstein and of Clark and Taylor in this direction are based on sound physiological principles,* just how far we may hope to progress in this direction remains to be seen. "Preliminary reports," particularly in surgery, are too often bred of momentary enthusiasm, and any maladies which overlap, as do these, the boundaries of another specialty like orthopaedics demand, for the end-results, a long and patient wait with coöperative treatment.

The Facial Neuralgias. In the trigeminal group of root divisions alone have the surgical results been eminently satisfactory—indeed, they are possibly the most satisfactory of all the major performances of neurological surgery. Unhappily the operation early acquired an unfortunate reputation which special methods have not sufficed to entirely set aside; and most patients with major neuralgias present themselves for treatment with the full expectation of the loss of an eye, of an unsightly facial paralysis and of a probable recurrence of pain. Haphazard operating bred of inexperience is entirely responsible for this impression, and some of the most shocking examples of bad surgery filter through to the neurological specialist as the end-results of former incomplete ganglion operations.

Fortunately, owing to the present widespread employment of the deep alcohol injections, largely due to Patrick's insistence on their efficacy, much suffering has been spared and many needless and temporizing extracranial operations have been avoided. Neurologists in general would do well to make more use than they do of this form of minor surgery—a straw which shows the direction of the wind. However, in the true major neuralgias the injections soon lose their efficacy and further procrastination is unwise.

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*Charles Bell found that in the ass, after supramaxillary divisions of both trigemini, the upper lip was no longer elevated in feeding: he consequently thought that the nerves might be motor. Experiments in Exner's laboratory suggested that "paralysis" of the laryngeal muscles of the horse may follow section of the corresponding sensory nerve of the larynx. Finally, Sherrington has shown a most striking example as furnished by the ape, for after section of all of the afferent roots from the limb the grasp of the corresponding hand or foot is permanently lost, whereas if a single root is left there may be weakness, but total loss does not follow. In either case, however, the normal grasp may be elicited by stimulation of the appropriate area of the cerebral cortex.

In consideration of the average age of the patients, their prolonged suffering, the protracted use of drugs and poor nutritional state, the mortality of the operation for trigeminal root avulsion is surprisingly low. We have had 90 consecutive cases without a fatality; the average hospital residence has been little more than two weeks; it is often impossible for the uninformed to subsequently tell, without sensory tests, upon which side the neurectomy has been performed; and in most instances the outcome is more of a rejuvenation than one sees after almost any other surgical measure. It remains, however—let this point be emphasized again—an operation not to be undertaken by the untrained surgeon. There are comparatively few operators who can resist the temptation to coquette occasionally with the more rare and more difficult operations. It is a failing common to the clan, and a vague feeling of satisfaction is experienced in placing them to one's supposed credit: but it is more often to one's discredit, as time proves.

Straightforward and uncomplicated as the neurectomy may prove when done by an experienced team—for it is not an individual event—there are certain clinical facts in regard to these facial neuralgias which our comparatively long series of cases has brought to light. It has become clear that neuralgic pain referred to the trigeminal territory need not be conveyed by the fifth nerve, for in spite of a total and permanent postoperative anaesthesia of this sensory field, three of the patients in the series have had this pain absolutely unmodified by the neurectomy. They are all individuals whose extreme discomforts, referred primarily to the trigeminal area, have been of a continuous rather than a paroxysmal nature. All of them are patients for whom the operation was conducted with some therapeutic misgivings in view of the ineffective results of earlier peripheral injections and neurectomies. And these were instances of obvious major neuralgia, rest assured, not cases which could be ascribed to any of the common lesions to which secondary nerve involvement may be ascribed. There are other possible sources of origin for the facial neuralgias of this type which we must carefully look for in the future—three sources in particular. Sluder's investigations have shown that an inflammatory involvement of Meckel's ganglion may occasion a more or less continuous and characteristic pain referred to the lower facial areas: Ramsay Hunt's clinical studies on auricular herpes have brought the sensory division of the facial nerve into prominence and have made it clear that geniculate neuralgias are a possible source of confusion: and such a report as Weisenburg has recently made of a patient with supposed neuralgia quinti major who had been subjected to numerous peripheral operations and finally to a trigeminal extirpation without relief—a small cerebello-pontine tumor having been the cause of the discomforts from the beginning—makes this a third possible source of diagnostic error which must hereafter be carefully avoided.

And now, after skimming this variety of subjects which have happened to be momentarily of live interest to me, I am conscious that a selection of topics possibly of more general interest might have been crowded into the pages of this address, in which I should have liked, too, to pay generous tribute to those whom I recognize as my own chief examples in general methods of work—Kocher, Sherrington and Halsted—and, fully conscious of the personal note which has been struck, to the many like Horsley, Krause and Chipault who have played and will long continue to play, I trust, a far more important rôle than I can aspire to in this special field.

There is no question but that a training for neurological surgery must come through laboratory experiences, and just as we are indebted to experimentation on the lower animals for almost every fact of importance which has made for the advance of this particular department, so also must we call upon them for the mere practice of hand essential to success in their clinical applications. Those who oppose the employment of animals for such purposes leave us the only alternative of subjecting our fellow man, as a lesser creature, to our first crude manipulations.

In work upon the central nervous system many of the principles are widely different from those applicable to other organs of the body and cannot justifiably be put into practice except under the most favorable hospital environment. Even then the primary interest of a single individual can do little without the concentration of effort of an unshifting group of laboratory trained associates who possess "an infinite capacity for taking pains" in both clinic and operating room. Without the coöperative devotion to this work of G. J. Heuer, S. J. Crowe and Emil Goetsch any personal efforts toward meeting the many problems which daily confront us would have been entirely unavailing, and the operative procedures themselves have often been saved from disaster by Dr Davis's skillful handling of the anaesthetic.

Neurological surgery is fascinating and will long continue an important and profitable field for intensive cultivation, partly because it has been largely unworked from an operative standpoint, partly because it deals with one of the two most important systems of the body—nervous and circulatory. It is gratifying to see that a number of young men are fitting themselves to specialize in it, with a preparation which makes envious one who has wriggled into the subject and, like the proverbial squid, has left little but a trail of ink behind him.

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Report of an Epidemic of Diphtheria in a Convalescent Home for Children.

By R. G. PERKINS, M. D., and A. F. FURRER, M. D., Cleveland.

Rainbow Cottage is a convalescent home for children, well situated in the country near Cleveland, and admirably managed. All its patients, for the most part children suffering from bone or joint tuberculosis, are admitted either from the wards or through the dispensary of Lakeside Hospital. The children who enter the cottage from the wards have all previously received a prophylactic dose of 1,000 units of diphtheria antitoxin, administered as a routine measure at the hospital; those who come through the dispensary are given an antitoxin injection on admission to the cottage. The home conditions, too, of the latter are all investigated by a visiting nurse.

A resident medical house officer and a sufficient nursing staff insure careful watchfulness of the cottage patients. With any appearance of illness or unexplained rise of temperature on the part of any inmate an immediate examination is made with the possibility of contagious disease ever in mind. A case in the remotest degree suggesting diphtheria or one of the exanthemata is at once isolated and cultures are taken from the patient's throat. Should a case of diphtheria occur the individual is at once removed to the isolation ward in a separate building and the quarters formerly occupied are thoroughly disinfected. The cottage is quarantined for 14 days and the isolated child is not returned to the ward until two successive negative throat cultures have been obtained.

History of the Epidemic: In spite of these precautions between December 10, 1908, and June, 2, 1909, there occurred 18 cases of diphtheria among the inmates of Rainbow Cottage, including in this number all individuals in whose throats diphtheria bacilli were found. During the period of the epidemic there were 28 children and 12 adults in the cottage so that 44% of the inmates were affected. Of this number three were adults, two being nurses and the other a nursery maid, and 15 were children varying in age between four and 12 years. There was no mortality among the patients, only the first case which was of laryngeal type being severe and requiring large doses of antitoxin, 25,000 to 30,000 units being given in 48 hours.

This case, a child with chronic cervical adenitis who was admitted through the dispensary Nov. 30, 1908, did not receive a prophylactic dose of antitoxin*, developed signs of diphtheria Dec. 10, 1908, and was at once quarantined in the isolation building. A second case occurred in the ward on Dec. 22 and the third on Jan. 4. Following these cases a prophylactic dose of antitoxin was given to all the children and nursery maids and the same was offered to the nurses.

There were no new cases for six weeks so that the quarantine was removed from the wards and the risk of new cases regarded as over when one of the nurses developed what was supposed to be tonsillitis. Cultures, however, revealed the diphtheria bacillus. On the same day the fifth case occurred in a child, associated with Vincent's angina. Two days later the sixth case was discovered, cultures from nose and throat being positive.

After an interval of four weeks the seventh case developed in a little girl with severe mitral lesions and poor compensation, which made it inadvisable that she be subjected to the excitement and exertion of moving and she was therefore isolated where she was.

The apparently spontaneous development of these several cases within three months, in spite of early isolation, rigid quarantine and disinfection, suggested to one of us that there might be some latent infection among the inmates of the cottage, so a routine examination of all the throats and noses was made to ascertain the possible presence of diphtheria bacilli among the apparently healthy.

These cultures resulted in positive findings in eight persons and some very suspicious forms in a dog which had been seen to enter the basement of the isolation ward. These last, as will be noted later, were found not to be diphtheria bacilli. The dog was killed after the first report so that its case could not be adequately followed up.

Cultures were also taken from a cat but while one or two suspicious forms were seen they could not be isolated. All cases with positive reports were at once isolated and subsequent examinations of the remaining patients revealed only one case which had probably been overlooked the first time, and which was at once sent to the isolation building.

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*At that time the routine practise of giving prophylactic doses of antitoxin was not in force in cases coming from the dispensary.

This makes seven cases in which the disease was diagnosed from the symptoms and in which positive cultures were secured for proof, and eight cases in which there were *no symptoms* but in which Klebs-Loeffler bacilli were found either in throat, or nose, or both.

All these cases were kept isolated and cultures made from time to time for determining the time for their release, careful and active measures being taken in the meantime in the way of local disinfection. Additional small doses of antitoxin were given in the cases which were apparently carriers, and larger doses in the cases actively ill.

No cases were dismissed until they had had two successive negative cultures. Positive cultures were obtained from noses and throats in some cases for *several months* in spite of the most active treatment.

Points of Interest.

The first case occurred in a child unprotected by antitoxin.

It will be noticed that the second and third cases developed seven and 19 days respectively after the first in spite of early isolation, thorough disinfection, and quarantine precautions.

Six weeks later a nurse who had attended one or more of the first three cases for a brief period and who had not had antitoxin came down with a sore throat.

The considerable length of time since exposure, mildness of constitutional symptoms and absorption of mind incident to the duties of a busy, surgical nurse undoubtedly account for an unfortunate delay of two or three days before a culture was obtained which was found to be positive.

The development of the fifth case on the same day as the nurse and the sixth, two days later, suggests very clearly the source of infection. The seventh case occurred four weeks later.

At this time cultures were made of the throats of all inmates resulting in positive findings in eight persons or 44% of the total number inhabiting the cottage.

On account of the distance from the city and the comparative infrequency of visitors, the probability of infection being carried from without is minimal and this epidemic may be considered as having spread from inmate carriers, from patients whose *noses* had not been examined before readmission after quarantining, or from new patients whose throats had not been adequately examined before admission. This last undoubtedly holds good for the last case in the series which developed almost at once after admission while at that time all "carriers" were isolated.

Summary of Bacteriological Work.*

In at least two of the cases not showing any clinical signs of diphtheria or tonsillitis there were found organisms of the Klebs-Loeffler type which were virulent to guinea pigs in small doses and which were able, under the usual conditions, to produce an active toxin.

The lack of cultural uniformity in the organisms isolated may be perhaps traced to the late period at which the epidemic came under bacteriologic investigation when the lesions in the original patients had cleared up.

As to the organisms in the nose, which were somewhat atypical in their appearance and weak or negative in the production of toxin, they must be classed as either avirulent diphtheria or as pseudodiphtheria bacilli.

According to the work of Hamilton and others the only final distinction in these cases is the formation of a toxin which is neutralized by antitoxin, leaving the finer morphological and cultural differences as minor in importance.

One of the most interesting parts of the work lay in the finding in the throat of a dog about the place organisms with metachromatic granules and a morphology in part simulating that of the Klebs-Loeffler bacillus. This organism was actively pathogenic for guinea pigs in the manner of a septicemia, but formed *no* toxin when treated as were the diphtheria cultures. Later it was found that the organism lost all its virulence for guinea pigs in artificial media, even in large amounts.

The general cultural characteristics are noted only in brief here, as they are to be reported elsewhere by one of us in reference to diphtheria-like organisms in throats of human beings and animals. When first examined on serum the morphology so closely resembled that of the diphtheria bacillus that it was necessary to isolate the organisms and then to grow them on various media. As soon as this was done the difference became evident and this indeed is the case in all of the Klebs-Loeffler[11] like organisms we have come across.

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*From the Laboratory of Pathology and Hygiene, W. R. U. Medical College.

This makes it necessary to *isolate* and *identify* the organisms in the throats of supposed animal carriers before the diagnosis of "carrier" can be made. There were also organisms of the same type seen in the culture from the throat of a cat, but they were in very small numbers and could not be isolated before they were overgrown by the associated organisms.

The study of this epidemic emphasizes the following points which are now gradually becoming axioms in diphtheria prophylaxis.

1. The importance of administering a prophylactic dose of antitoxin to all children on admission to a hospital.
2. The necessity and value of taking cultures and making bacteriologic examinations.
3. The advisability of taking cultures from the nose as well as from the throat before discharging patients from quarantine.
4. The nurse in attendance upon a diphtheria case should not be discharged from quarantine until negative cultures have been obtained.
5. Isolation, quarantine, disinfection and fumigation are found to be of little or no value in controlling an epidemic until a systematic search is made for latent infections among inmates.

In conclusion we wish to express our obligations to Dr E. F. Cushing for suggestions and criticisms during the preparation of this paper.

Cerebrospinal Meningitis, with Special Reference to its Diagnosis and Treatment.

By LOUIS W. LADD, M. D., Assistant Professor of Clinical Microscopy, Western Reserve University, Cleveland.

After a more or less varied clinical experience with meningitis extending over a period of several years, I cannot help agreeing with Bramwell's statement that there are no absolutely distinctive anatomical features which justify a positive opinion as to the bacteriological nature of this disease. Inasmuch as the prognosis and treatment depend absolutely upon the nature of the infection, bacteriologically speaking, it seems to me advisable to lay some emphasis upon the necessity of physicians not placing too much reliance upon their ability to differentiate the various

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Read before the Academy of Medicine of Cleveland, October 21, 1910.

types of meningitis from their clinical aspects alone, because it has been my misfortune to witness several instances in which nothing was done when much might have been accomplished, because the clinical picture was that so accurately depicted in text-books as being typical of tuberculous meningitis when in reality the condition was one of endemic meningococcus infection.

The clinical variations of meningitis are remarkably wide and misleading, and there are no classical symptoms applicable to each and every type of the disease. While generally speaking, tuberculous meningitis is more insidious in its onset and the course of the disease is more prolonged than in other types, on the other hand I have seen two cases, bacteriologically proved to be tuberculous, in which death ensued on the fourth day after the onset of symptoms. The onset in one of these cases was fulminant and in no way distinguishable from that of the meningococcus type. The development of sudden coma, so much more common in meningitis of the meningococcus type, may occur early in tuberculous meningitis.

In early childhood, before closure of the fontanels occurs, not infrequently the onset of the meningococcus type of cerebrospinal meningitis is ushered in with vomiting and gastro-enteritis which throws one off his guard until one or two weeks later, a slight rigidity, opisthotonos, or a general convulsion draws his attention to the nature of the process. Only too often has it been my experience to be called in to do a lumbar puncture and administer serum in this type of case and then fail to accomplish satisfactory results owing to the development of hydrocephalus, even though the spinal fluid promptly cleared under the treatment.

One cannot be too careful on seeing such children suffering apparently from a simple gastro-intestinal upset, to test the reflexes, the eyes, the ears, and above all to note whether the fontanels are bulging when the child lies quietly and whether the cervical muscles are at all rigid. Brudzinski's neck sign and the contralateral reflex may be of help in the early diagnosis of meningitis with this mode of onset. The contralateral reflex is a concomitant reflex of the leg on one side when passive flexion of the leg on the other side is made (the identical contralateral reflex). Occasionally the motion of the other leg is extension instead of flexion (the reciprocal contralateral reflex). The neck sign consists in passive flexion of the head forward, the other hand being pressed on the chest. In meningitis this will cause flexion of the legs at the hips and knees and marked flexion of the legs on the pelvis.

Greco and Zaimvosky agree with Brudzinski as regards the value of these signs. Brudzinski finds the neck sign positive in 97% of cases of meningitis, the contralateral reflex positive in 66% of cases, Kernig's sign positive in 57%, and Babinski's, 50%. John Lovett Morse on examination of 400 children, 90 of whom were well, and others suffering from diseases not of the nervous system, failed to obtain either of these signs in any instance, and analysis of 11 cases of tuberculous meningitis, five cases of meningococcus meningitis, and one case of pneumococcus meningitis in his own experience, brings him to the conclusion that the contralateral reflex and neck sign are never present in healthy children or in those ill with diseases other than of the nervous system. They are almost never present in diseases of the nervous system except in a case of meningitis. The contralateral reflex is found much less constantly than the neck sign, both may occur intermittently or be absent throughout the whole course of the disease. Their presence in an acute disease is strong evidence in favor of meningitis. Their absence does not exclude meningitis. They occur in all types of meningitis and are of no importance in differentiating between them.

A petechial eruption, when present in a patient presenting the clinical aspect of meningitis, is almost invariably diagnostic of meningococcus infection. Herpes labialis, however, while more commonly found in meningococcus infection, may also be present in influenzal or pneumococcic meningitis. Acute purulent meningitis of fulminating type, in no respect different clinically from that of the epidemic meningococcic variety, may develop as a result of infection with influenza bacillus, pneumococcus, and in three instances, I have isolated from the spinal fluid obtained from lumbar puncture a short streptothrix which resisted cultivation on artificial culture media and in animals. In one instance a streptococcus was associated with a streptothrix and grew out readily. Meningococcus meningitis not infrequently presents the picture, clinically considered diagnostic of tuberculous meningitis. The presence of choroid tubercles or signs of tuberculosis elsewhere may be of value in differentiating such cases.

Quincke's serous meningitis, accompanied by greatly increased pressure of the arachnoid fluid may simulate tuberculous or meningococcus meningitis, particularly if fever be present. Quincke's meningitis may arise spontaneously (apparently) or after infectious diseases such as influenza, pneumonia, gastroenteritis, measles, and after various intoxications. Its occurrence in purulent otitis is of special importance on account of the difficulty in diagnosis. On four occasions, in children presenting the typical clinical features of meningitis, lumbar puncture showed large amounts of perfectly clear, limpid, spinal fluid under great pressure. Examination of this fluid failed to reveal organisms of any sort, either in coverslip preparation or culturally. Recovery promptly resulted after lumbar puncture in all four cases. There were no flocculi of fibrin upon standing and cytological examination was normal. In three of the four cases there was every reason for making a clinical diagnosis of tuberculous meningitis, in view of the fact that there were no cutaneous eruptions and the children were living in houses where active tuberculosis was present in some member of the family.

In one case seen with Dr. Fred Herrick, the father had tuberculosis and later died as a result of it. This child, 10 months old, one year after recovery from meningitis developed what was clinically tuberculosis of the hip, which required extension for a period of four months. The child eventually recovered completely, except for slight limitation in motion in the hip.

Another case seen in Wheeling, W. Va., had been ill three weeks with meningitis and the grandfather living in the same house had numerous tubercle bacilli in his expectoration. Following lumbar puncture, complete cure resulted.

The third case, seen in Fairport with Dr. York was exposed for several weeks to the caresses of a guest of the family who had been treated for several years for tuberculosis and was still coughing. The fourth case developed in a child suffering from influenza and prompt recovery followed the withdrawal of a large amount of spinal fluid.

Cases of recovery from meningitis in which tubercle bacilli have been found in the spinal fluid are rare, but each year brings additional information from good observers that recovery may take place. In 1906 Renon and Tissier observed tuberculous meningitis in a child in which cytological examination of the spinal fluid obtained by lumbar puncture on seven occasions during the last 25 days of illness, was always negative. Guinea pig inoculations proved positive. Archard has made a similar observation. Whether these three cases seen by me were of tuberculous origin or examples of serous meningitis is difficult to tell. Unfortunately, guinea pigs were not inoculated.

In several instances where meningitis was suspected and no symptoms pointed to middle ear disease, the otoscopic examination revealed unmistakable evidence of inflammation and prompt relief of symptoms resulted from paracentesis. When one realizes that a high continuous fever may persist for several weeks in a child 12 years of age without pain in the ear being complained of, and that prompt relief may follow paracentesis with the evacuation of pus, it is easy to understand how a purulent meningitis may develop in a much younger child as a result of an unrecognized middle ear disease. In all cases of meningitis, careful otoscopic examination should be made.

Lumbar puncture offers us the most satisfactory means of arriving at a correct diagnosis in the shortest space of time, and should be promptly done when there is the slightest suspicion of an existing meningitis. The presence of the meningococcus in the spinal fluid calls for the prompt use of Flexner's serum in full doses on successive days until the spinal fluid clears and the toxemia and physical signs of meningitis have disappeared. In the event of chronic hydrocephalus developing in this type of meningitis, aspiration of the ventricles should be performed and serum injected in place of the fluid removed, as advocated by Dr Harvey Cushing. Influenza bacilli can be isolated and grown from the spinal fluid when it is the etiological agent, and one case seen at the City Hospital, in which this organism was present and the spinal fluid extremely purulent, progressed to a complete recovery following daily adminstration of normal horse serum intraspinally.

Pneumococci, streptococci, staphylococci, typhoid bacilli, colon bacilli, bacillus pyocyaneus, leptothrix, and streptothrix forms all have been isolated as etiologic agents of acute cerebrospinal meningitis. In six cases of streptococcus meningitis resulting from extension of middle ear disease, the use of antistreptococcic serum gave results which were not at all encouraging. Tubercle bacilli, if properly looked for in cases of tuberculous meningitis, can be found in the spinal fluid in 90% or more of the cases. In one case of tuberculous meningitis seen with Dr. John Phillips five hours after the first symptoms of cerebral irritation developed, lumbar puncture was performed and tubercle bacilli found in the spinal fluid. A plural effusion had been removed from this patient two weeks previous to the development of meningitis and had not recurred.

In examining the spinal fluid for tubercle bacilli, it is best to withdraw the fluid in two tubes. One of these can be used immediately for cytological examination. The other should be set aside for 18 to 24 hours until the fibrinous strands have completely formed. Take a long and stiff platinum loop, gently detach the fibrin from the sides and bottom of the tube, and delicately scrape the bottom of the tube; now have a clean slide ready and remove most of the watery elements from the loop by gently touching the loop to the surface of the glass slide at one end, and then with a gentle rotary motion over an area the size of a three-cent piece transfer the fibrinous clot from the loop to the slide; fix, stain, and examine microscopically, using a mechanical stage for searching, and one can find tubercle bacilli in the same fluid which did not give positive results when the centrifuge was used.

The treatment of meningitis, other than that of meningococcus type, is most discouraging. When secondary to some condition that can be treated surgically, this offers the most hope. Otherwise we must rely upon lumbar puncture, warm baths, opiates, and the use of vaccines or antitoxic sera, and if these cannot be obtained, normal horse serum may be of benefit. The use of urotropin in full doses, as advocated by Crowe, is to be recommended highly as an adjunct to other methods of treatment of this disease. In several cases of tuberculous meningitis, I have heated the spinal fluid removed from the patient to 60° C. and then cautiously administered minute doses of this subcutaneously. In a few instances there has followed some apparent temporary benefit, but no permanent good resulted. It is possible that this procedure, carefully carried out in cases seen early, might produce more beneficial results.

211 Osborn Bldg.

Sero-Cyto-Diagnosis and its Importance in the Diagnosis of the Various Insanities.

By JOHN D. O'BRIEN, M. D., Pathologist and Assistant Physician, and
ORAL D. TATJE, M. D., Assistant Pathologist and Assistant
Physician, Massillon State Hospital, Massillon, O.
From the Pathological Laboratory of the Massillon State Hospital,
Massillon, O.

The additions to our knowledge that of late years we have acquired from a study of the cerebrospinal fluid in disease, have been welcome and valuable aids to the practitioner. While these newer laboratory methods cannot displace actual observation of well known physical signs, yet they are of the utmost value when we have to deal with obscure and doubtful cases.

If, for instance, we take Paresis, in which an early diagnosis is of so much importance, the clinical picture is one of the sharpest in the whole of medicine, yet in an early or atypical case the difficulties in diagnosis are often exceedingly great, in fact, so much is this the case that it is often found in our practise that a majority of the cases are admitted to the hospital either with an erroneous diagnosis or else comparatively late in the disease. It then remains for an examination of the cerebrospinal fluid to lift all doubt.

The first application of the examination of the cerebrospinal fluid was made in 1900 by Widal and Ravault who found that lymphocytosis was a constant accompaniment of Paresis. One year later Achard made the announcement that considerable quantities of proteid are to be found in the cerebrospinal fluid in paresis and tabes.

With the introduction of the Wassermann reaction, it is believed, there has been added another very important aid in determining the etiology of certain diseased conditions, it being generally believed that with this reaction, it is possible to detect syphilis in cases in which it exists in a latent form. This reaction, in addition to the help it gives in diagnosis, affords important therapeutic indications and constitutes, furthermore, a means of investigation of the relationship between syphilis and its rôle in the pathogenesis of insanity.

In the results embodied in this contribution, we have made use of the Wassermann reaction applied to the blood and cerebro-

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spinal fluid. We have also made use of the butyric acid test as recommended by Noguchi, in addition to controlling such findings by means of a cytological examination of the cerebrospinal fluid.

Wassermann reaction: We have adhered strongly to the original technic as advised by Wassermann. Realizing the great many modifications that have been recommended, we feel that such modifications have led to the widely differing contradictory results obtained by different investigators. We have been able during the course of these examinations, to make reexaminations and to reexamine doubtful cases.

I shall not, in such a short paper, discuss the details as to the possible biological significance of the Wassermann reaction—the prevailing opinion being that it is pathognomonic of syphilis. Other observers claim to have obtained it in scarlet fever, tuberculosis, pneumonia, leprosy and other infectious diseases. The majority, however, believe that it is a phenomenon of interaction between lipoids.

In comparison with the Wassermann reaction, we have employed the butyric acid test, which is far more sensitive than the Wassermann reaction, but there are still some objections to the great generality of positive reactions met with it. It appears to be constant in postmortem cerebrospinal fluid in some cases of disintegration of the nervous structures of non-specific and non-inflammatory character. It is also present in some inflammatory conditions of the meninges. That the butyric acid reaction will serve a useful purpose in the diagnosis of nervous and mental diseases, has been indicated by the reports of various operators. The limits of the test, however, should be precisely defined.

It can with safety be said that in all cases, in the cerebrospinal fluid of which there is an increase in the proteid content, particularly globulin, the reaction will be given. For the sake of convenience we have arranged our results in two tables. In Table I is seen the frequency of the occurrence of the Wassermann reaction, the butyric acid test, cytological examination and the specific history as obtained to the best of our knowledge.

Table II shows the results of the Wassermann reaction as found in the blood of the non-insane, also the history obtained.

TABLE No. I.—To show the frequency of occurrence of Wassermann, butyric acid test and cytological examination, with specific history in various psychoses.

DISEASE	Wassermann reaction in the blood				CEREBROSPINAL FLUID												Specific history			
					Wassermann reaction				Butyric acid reaction				Cytological examination							
	No.	+	—	?	No.	+	—	?	No.	+	—	?	No.	+	—	?	No.	+	—	?
Paresis	24	17	7		46	35	8	3	46	46			79	77	2		137	92	32	13
Cerebral syphilis	10	8	2		25	20	5		25	22	3		35	32	3		35	15	16	4
Dementia praecox	10	6	4		7	4	3		7	3	4		17	11	6		17	6	10	1
Manic-depressive	22	11	11		10	3	7		10	2	8		20	6	14		20	1	18	1
Alcoholism	7	5	2		12	5	7		12	6	6		14	9	5		14	3	8	3
Cerebral arteriosclerosis	5	4	1														5	1	2	2
Imbecility	3		3		3	3			3	3			3	1	2		3		2	1
Erb's spinal paralysis					1	1											1	1		
Paranoia													2	1	1		2	1	1	
Epilepsy													2	1	1		2		2	
Huntingdon's chorea													1		1		1		1	
Feigning									1	1			1		1		1	1		
Total	81	51	30		104	71	30	3	104	83	21		174	138	36		238	121	92	25

Table No. 11. Showing the frequency of the Wassermann reaction in the blood serum of others than insane.

	Wassermann reaction in the blood				Specific history			
	No. of Cases	+	—	?	No. of Cases	+	—	?
Prostitutes	14	13	1	....	14	6	5	3
Familial	13	5	6	2	....	....	....	....
Normals	16	4	12	....	16	2	10	4
Total	37	19	18	....	30	8	15	7

At a glance in observing paresis we note the Wassermann reaction to be present in the cerebrospinal fluid in a very large percentage of the cases, a negative result occurring in only seven out of 46 cases, giving a percentage of 76%, while the butyric acid reaction was positive in 100% of the cases.

Plant states that a positive Wassermann reaction with the cerebrospinal fluid almost invariably means a metasyphilitic disease, and that it is the exception to find a positively reacting fluid in cerebral or spinal syphilis. Nonne on the other hand claims that the cases of tabes reported with a positive reaction of the cerebrospinal fluid are mostly cases of taboparesis, a fact which, if confirmed by further research, is of very great importance. This rule does not hold good with respect to the above reported results.

Marie and Levaditi in studying the cerebrospinal fluid in this condition, found that in the incipiency of paresis there were a much smaller number of positive reactions than later when the disease had advanced. In their studies the percentage of positive reactions was in direct proportion to the activity of the morbid process.

In cerebral syphilis the Wassermann reaction was found positive in 80% of the cases, while the Noguchi butyric acid test was present in 88%. Lymphocytosis was found in 92% of the cases. In cerebral syphilis the Wassermann reaction was positive in the blood serum in 80%, while in paresis the reaction was present in 71%.

The results published by various investigators relative to the results with mercury in the treatment of pulmonary tuberculosis prompted us to make an examination of the blood serum for the Wassermann reaction. In eight cases the Wassermann reaction was found positive in 60%. The results obtained by specific treatment was very striking in about 65% of the cases. The question naturally arises as to the significance of a positive reaction in this disease, as no history of specific infection was obtainable.

The blood serum obtained from 14 prostitutes gave a positive reaction in 93%, while a positive history of syphilis was obtainable only in 50% of the cases. All of the cases examined were in houses of prostitution at the time the examination was made. In connection with the examination of the blood serum of paretics for the Wassermann reaction, and examination of the blood serum obtained from the wives and children of 13 paretics, a positive reaction was obtained in 38% of the cases.

Lymphocytosis: At different times we made use of the old method of examination, which consists of making a film of the deposit, but found it often inaccurate. Recently we relied upon Alzheimer's method. By this method a more accurate count can be obtained and a clearer differentation of the various types of cells made. Lymphocytosis appears to be most constant and at the same time most exclusively limited to paresis—some very high counts being recorded, the lymphocytosis being usually greatest at the onset of the disease, and after advancement of the disease a diminution being seen. The differential cell count was made in a majority of the examinations and was found to be of great value. In only two cases of paresis did we fail to find a lymphocytosis. It must be borne in mind that tumors and other inflammatory conditions of the meninges are capable of producing a lymphocytosis. Lymphocytosis is also quite frequent in cases of dementia praecox of long standing.

Summary: Of all the elements of diagnosis, the serological, chemical and cytological examinations of the cerebrospinal fluid approach nearest to the nature of an anatomical examination of the central nervous system.

For the present it should be remembered that the results of such examinations, as in a case of paresis, are to be questioned, if the histological examination fails to show the picture of what we understand as the cortical changes of paresis.

If the Wassermann reaction is to be considered biologically specific for syphilis, one can readily see that syphilis occupies an important position in the etiology of all the insanities.

We consider the cytological examination with increase proteid content a more important diagnostic feature of paresis than the Wassermann reaction alone.

In active syphilis of the nervous system the characteristic reaction in the blood is an antigen reaction, and indicates the presence and activity of the syphilitic virus in the body, while in the supposedly parasyphilitic conditions there is a different reaction. In this case, the reaction in the blood is an antibody reaction and it gives no indication of any active syphilitic process. I wish to acknowledge my thanks to Dr Adair for his kind assistance in performing lumbar puncture on a number of the above reported cases.

Report of a Case of Malaria in Early Infancy.

By FRED BEEKEL, M. D., Attending Physician Babies' Dispensary
and Hospital of Cleveland.

Where malaria prevails infants and children are especially prone to suffer from the disease, but in this region malarial infection of an infant is so rare that the following case seems worth reporting in some detail.

A. H., 10 weeks old, of Hungarian parentage, was brought to the clinic of the Babies' Dispensary and Hospital, Dec. 7, 1908. He was a firstborn child, had been breast-fed entirely and had been well except for the present illness. This began three weeks before, and had been marked by symptoms of feverishness, restlessness, quickened breathing, lessened desire for food, occasional vomiting and increased frequency of bowel movements. The infant was well developed and well nourished; weight, 4,675 grams; temperature, 38.6° C. His appearance was remarkable because of the extreme pallor; the normal skin tint was replaced by a lemon-yellow color and the visible mucous membranes were almost white. The breathing was 50-60 times per minute with slight expiratory grunting and some movement of the alae nasi. There was no skin rash. The throat and mouth were negative. The chest examination was negative. The spleen was easily palpable and hard, and extended 3 cm. below the edge of the ribs. The liver was 3 cm. below the costal margin. There was no visible peristalsis, and the abdomen was not distended. Two small glands were felt in the posterior cervical region and one in the left axilla. The stool was of an orange-yellow color.

The blood examination showed: hemoglobin, 30%; white blood cells, 14,800; red cells, 1,600,000. Examination of stained specimens showed a very noticeable variation of size of the red corpuscles with poikilocytosis

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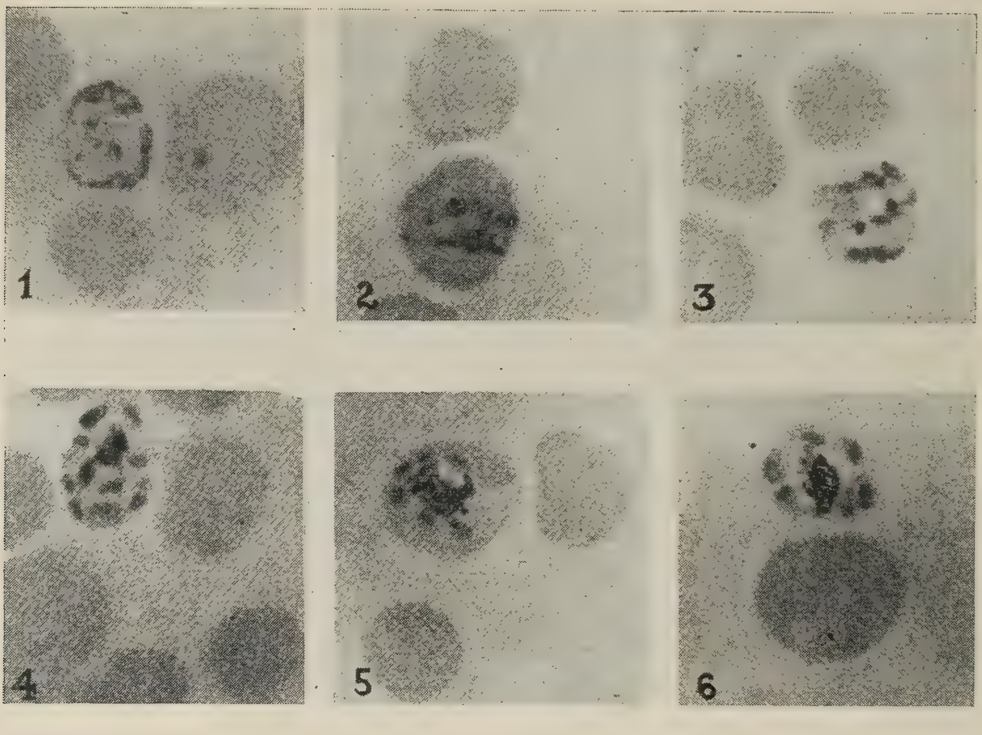
Read before the Clinical and Pathological Section of the Academy of Medicine of Cleveland, June 4, 1909.

and polychromatophilia and nucleated red cells in large numbers, while the presence in many corpuscles of bluish-gray, pigmented, slightly irregular bodies solved at once the question of diagnosis. Hyaline forms of the parasite, early pigmented forms, a few filling one-third to three-quarters of the infected red cell, presegmenting and segmenting forms numerous enough to be easily found were all present.



Photomicrographs (X 1400) of the quartan organisms in the blood.

1. Two-thirds grown, intracellular, quartan organism, showing characteristic peripheral arrangement of pigment. In next cell, an ameboid organism showing chromatin dot and faint protoplasm.
2. Partly grown quartan organism stretching across cell, coarse black pigment clumps lying at borders of organism.
3. Full grown quartan organism, with pigment arranged in rows. Some of the spore chromatin shows.
4. Presegmenting quartan organism showing light spores.
5. Intracellular, segmenting, quartan organism showing six spores, pigment clumped at the center. The organism does not fill red cell.
6. Segmenting extracellular quartan organism showing six spores.

Both father and mother of the infant were found to have suffered from malaria in Hungary, the father at the age of 15, the mother when 12 years old, but to have been free from symptoms for some years. The spleen in each of the parents was just palpable on deep inspiration.

Dec. 9, 1908: Weight, 4690 grams; temperature 38° C. Child very pale, breathing rapidly, alae nasi dilating, expression anxious. The urine on this date was examined and was clear, slightly alkaline, without albumin, sugar or special sediment. Stained blood specimens showed a few hyaline forms, more one-third grown pigmented ameboid forms, and forms of all gradations of size to the presegmenting. The partly grown forms frequently extended across the corpuscle and were pigmented at the borders, giving a band appearance to the organism. Often the protoplasm stretched lengthwise through an elongated red corpuscle, and had fine grains of black pigment along its edges.

Dec. 11, 1908: Child ill and with fever as before. Stained specimens of the blood of this date show several segmenting forms with pigment clumped at the center. The number of spores varies from 6 to 12, 6 and 8 predominating. There are presegmenting forms with regular arrangement of spores at the periphery, and lines of pigment radiating toward the center. There are also early pigmented forms, a few pure hyaline, and a few extracellular parasites. Examination of the child's blood in the fresh on this date showed a few large pigmented forms without movement and without motion of pigment. Diagnosis: *Plasmodium malariae*, quartan type, segmenting on December 7 and 11.

From Dec. 11 to 18 the child received quinin bisulphate in solution, 1½ grains to be given three times a day. On Dec. 16 it was found that the mother had been giving but half the dose designated, and a full dose that evening resulted in great diminution of parasites. A few degenerating forms on Dec. 18 were the last ones seen. Syrup of the iodid of iron in two drop doses three times a day was prescribed on the child's second visit to us, and was continued to the end of the month.

Improvement in the general condition was soon noted. On Dec. 12 the child had no fever, but on each of the four following days the temperature averaged 38.5° C. The mother, however, noticed feverishness, preceded by cold hands and feet, on only Dec. 14 and 16. The babe's color improved, vomiting ceased, and he slept and nursed well. The bowel movements numbered three or four per day, were loose, and varied in color from grayish-green to yellow. At no time was there constipation. By the middle of February, 1909, the child's weight had increased to 6,275 grams. He was then of good color, lusty, and well developed. Spleen just palpable at edge of ribs; liver not palpable; blood normal.

The general blood picture was one of severe anemia. Following are tables of white, red and hemoglobin determinations, and differential white counts.

Date.	Hemoglobin.	White cells.	Red cells.
12- 7-08	30%	14,800	1,600,000
12-19-09	40%	8,700	1,900,000
1- 2-09	70%	10,200	2,900,000
1-16-09	70%	8,400	2,800,000
2-17-09	90%	8,700	3,700,000
4-22-09	90%	13,000	5,000,000

DATE	Polymorphonuclears, %	Small mononuclears, %	Large mononuclears, including transitionals, %	Eosinophiles, %	Megaloblasts (to 600 white cells)	Normoblasts (to 600 white cells)
Dec. 7, 1908	39.5	7.5	53	0	55	66
Dec. 9, 1908	41	12	46.7	2	15	55
Dec. 11, 1908	33.3	16.5	50.2	1	22	42
Dec. 14, 1908	34.2	15.7	50	0	17	33
Dec. 15, 1908	48.5	15.5	36	3	10	55
Dec. 16, 1908	38	26	36	1	12	101
Dec. 19, 1908	31	26.5	40	2	0	25
Dec. 26, 1908	38.8	25	32	4	0	4
Jan. 2, 1909	22	30	47	1	0	0
Jan. 16, 1909	27.2	40	30	2.5	0	0
Feb. 17, 1909	47.5	27.2	21	3.7	0	0
Apr. 22, 1909	46	34	15.8	3.7	0	0

These tables show the degree of anemia, and the gradual improvement therein. The initial white count, taken during a period of sporulation, shows not leukopenia, but a slight leukocytosis. Such a leukocytosis, as in Billings case, is considered due to the anemia. The differential counts show the large mononuclears (including transitionals) in greatly increased proportion, while the small mononuclears and eosinophiles are below normal. With improvement in the child's condition the percentage of large mononuclears decreased, while the small mononuclears and eosinophiles increased. The nucleated red cells are given in numbers seen in counts of 300 white cells.

The source of this case of the rare quartan type of malaria is unknown. The child was never bitten by mosquitoes to the parents' knowledge. No case of illness occurred in the immediate neighborhood. The baby was born September 28, after which mosquitoes are not common. However, mosquito transmission possibly could have occurred. The question arises of intra-uterine infection by the mother, but cannot be proved on account of the time elapsed before the child manifested symptoms. Many stained specimens of the mother's blood were examined without finding parasites. The large mononuclear count of the mother's blood on six consecutive days averaged 7.3%, not large enough to indicate a recent infection with malaria. No pigmented leukocytes were seen in the mother's blood. No splenic puncture was made. Examinations of the father's blood were negative.

Intra-uterine transmission of malaria is discussed by Thomas of Leipzig, who refers to the cases of Dinstl, Schramm, Duschek, and Playfair. Bohn refers to these cases and also to that of Steiner. The evidence is insufficient to call these cases congenital, except that of Duschek, which showed pathological deposits of pigment at autopsy three hours after birth. Following the discovery of the malarial parasite, negative results as to fetal transmission were obtained by Bignami, and by Thayer, also by Pezopoulos and Cardamitis who admit, however, that they found two parasites in 11 preparations of blood from the fetal surface of a placenta.

Leon Hitte in his thesis describes 21 cases of intra-uterine transmission. Of the first 19, which he collected from the literature, one is the case of Duschek, already referred to, another is one reported by Bohn, a conclusive case; this was a premature dead infant which showed pathological evidence of malaria at autopsy. The other 17 cases are those of Buchut, Hawelka, Playfair, Brunzlow, Aubinais (two cases), Bureau (two cases), Carles, Leroux, Vigoroux, Bein, Winslow, Topi (three cases), and one not named. These cases present some evidence of being congenital, but are not conclusive, either because no microscopical examination was made, or because it was first made when the child had reached an age which would have permitted the incubation of an infection postnatally received. Hitte's two personal cases were observed in hospital in Algiers and the parasites were demonstrated in blood removed from the pulsating umbilical cords. One child developed symptoms, the other did not. Other possible instances are those of Bouzean (cited by Monti) of Cima, Getz, Moffat, Moncorvo (three cases), Josephson, Howard, Cadwell, and Peters. Meara has reported a case since the reading of this paper. Crandall of New York found the parasites in the blood of a new-born child 48-72 hours after birth, a conclusive case.

Économos reports seven cases, six of which are completely convincing. The parasites were found in the blood of the children within 48 hours after birth. In none of his cases was the spleen of the new-born enlarged. Some of the children were attacked immediately with fever, others not until later, others in spite of parasites in the blood developed no symptoms. He concludes that the manifestations do not appear in the infant unless the mother had malaria during the latter part of pregnancy.

These 11 conclusive reports which I have been able to find make certain the possibility of placental transmission of malaria, whether due to intermingling of maternal and fetal blood at the moment of separation of the placenta (Peters), or to pathological or normal solution of continuity of the placental syncytium. Such mode of infection must, however, be rare.

I wish to thank Drs Gerstenberger, Ladd and Marine, and Dr Kline of the Michigan State Psychopathic Hospital, for valuable assistance.

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EDITORIAL

Ehrlich's "606."

Numerous drugs have from time to time been extolled for the cure of syphilis. Within a few years arsenic has received recognition. An unofficinal chemical compound of arsenic, metaarseniousanalid, known under the trade name "atoxyl," was used seven or eight years ago quite extensively in Germany and France for the treatment of this disease. While the drug seemed to have a marked curative effect, its use was not without serious consequences in some cases. Furthermore, the longer it was used the less it seemed to possess any advantages over the well tried drugs already in vogue which had stood the test of centuries. Atoxyl was exploited, however, by many of the leading clinicians of Germany and France. The medical profession of England, which is eminently conservative, reported a number of unfavorable results in the treatment of syphilis by atoxyl. Several instances of blindness followed its administration together with other evidences of arsenical intoxication. Its main use, aside from the pecuniary reward to its promoters, was in demonstrating that arsenic has a decided influence on syphilitic manifestations.

The discovery of *Spirochaeta pallida,* supplemented by Wassermann's serum reaction, has eliminated empiricism and enabled investigators to study more accurately the effect of various preparations on this organism. The effect of quinin on *Plasmodium malariae* offered an example worthy to be attained in syphilis. The French school of syphilography has rejected both atoxyl and hectine (benzosulfonoparaaminophenylarsenate de soude) as uncertain and dangerous and are directing their efforts to overwhelm the spirochaetae by injecting vigorous doses of mercury into the system before the morbific agent has had time to resist the attack. It is even maintained by some that by injecting the medicament into the region of the primary lesion the disease may be aborted.

Beyond the Rhine, Prof. Ehrlich has for several years been studying this question and after numerous experiments on animals, less than a year ago first administered paradiamidodioxyarsenobenzol to man. The technical term employed for this substance is abbreviated in most German journals to arsenobenzol, or, as Ehrlich labels it, "606". Of over 7,000 cases already reported to Prof. Ehrlich about 12 deaths are recorded, in only one of which could the cause of death be ascribed immediately to the effect of the drug. It is claimed, moreover, and with apparent reason, that this case was thought by Prof. Ehrlich to be unfitted for this mode of treatment.

Aside from the medical profession, the widespread newspaper publicity given to this drug and its marvelous cures from a single dose have aroused general interest.

A few months ago the Rockefeller Institute for Medical Research of New York was given a supply of Ehrlich's "606" for experimental purposes. It was administered to about 20 cases without unfavorable symptoms and in many instances marked benefit was noted. A report of 14 of these cases has already been published. About three weeks ago a new supply was sent to the Rockefeller Institute to be distributed among certain American syphilographers and 10 doses were assigned to the writer. No directions accompanied the drug and as there seems to be little uniformity in its immediate preparation before administration, some difficulty was experienced at first in preparing the drug for hypodermic injection.

The powder is soluble only to a certain extent in water, although a 20% solution of sodium hydrate will readily cause it to assume a pasty consistence; water and a few drops of acetic acid may then be added which throws down a flocculent precipitate; this is finally triturated in a small mortar and either 10% sodium hydrate or 1% acetic acid added until complete neutralization is effected; the substance is then ready to be administrated either subcutaneously or deeply into the muscles. It has also been used by intravenous injection, but the majority of those who have so used it prefer subcutaneous injection, the latter method having the advantage, should arsenical poisoning ensue, that part of the substance is still accessible and may be removed before complete absorption takes place.

At this writing, a fortnight has elapsed since the drug was first used in Cleveland. Marked improvement in the symptoms was noted in some cases after four days. Not only are the local manifestations of the disease in some cases rapidly disappearing but a few of the patients have volunteered the information that they "feel much better" than before its administration: the mental effect may account for some of this, but certainly the use of the drug has been followed by a more rapid effect than has been observed by any other method. All cases before being subjected to this treatment were tested by the Wassermann and Noguchi tests. A week subsequently a marked diminution, although not complete disappearance, of the serum reaction was noted.

The substance is not yet on the market and it is not known how long before it will be given to the general profession. It is too early to say how permanent the effects will be, although from 9 to 11 months have already elapsed without any return of the luetic symptoms in those patients in whom the evidences of the disease disappeared after the use of this preparation.

In accessible lesions where spirochaetae had been found the organisms disappeared a few days after the administration of this drug. It is supposed by Ehrlich that this takes place throughout the body, although time alone will demonstrate the truth of this belief. It may be said, however, that a drug so delicate and difficult of preparation before it is administered, will hardly become popular for general use. Finally, it should be borne in mind that it must pass the test of clinical experience before we know whether or not it possesses advantages over mercury. W. T. C.

Social Service.

Until recently the rôle of the hospital dispensary has been twofold; on the one hand that of a clearing-house, where the acutely sick are weeded out from the mass of interesting "chronics", and minor maladies which throng the benches, and on the other hand, that of a teaching clinic, where students and, incidentally the dispensary staff, see a vast number and variety of diseased conditions at close range. Those patients in need of hospital care, proportionately a very small percentage of all the cases seen daily in a busy dispensary, are referred to the wards. The rest are more or less carefully studied, demonstrated to the students, examined and re-examined, and then are given their bottle of medicine, or box of pills, with a few perfunctory remarks of advice or admonition as to the necessity of "rest" or "fresh air" or "good simple diet," when in all probability the patient is struggling for existence in some overcrowded workroom, on wages barely sufficient to buy food for himself and family. That many individuals receive real benefit from the careful medical study which they receive is undoubtedly true, but that the benefits derived are largely on the side of the staff officers and students can scarcely be denied. The reason for all this is not far to seek. While the physicians in charge of an outpatient department see each case, carefully draw their conclusions on it, and endeavor to map out a plan for the treatment of each individual, yet their sphere of usefulness cannot reach far beyond the door of the dispensary. Outside the dispensary are the same inexorable facts,—ignorance, overwork, poverty and dirt. How can a few moment's talk on diet and a bottle of the tincture of nux vomica be expected to charm away such an host of evils?

In the hope of getting a firmer hold on the great problem of the welfare of the ambulatory patients, the Massachusetts General Hospital, some years ago, opened its social service department, as an adjunct to the outpatient department, hoping to keep in touch with the patients in their homes and their daily life. The fundamental aim of this department was to follow the patients beyond the dispensary, to aid them, and if necessary, to force them into better methods of living and thinking. At first an experiment, the department has grown to be an integral part of the outpatient system of the hospital. It is the link that joins the patient's life to the clinic. Through the untiring efforts of a large and intelligent staff of workers, the patients are followed, and helped to help themselves. The advice of the physician is now of value, for the Social Service Department shoulders the responsibility of carrying out the physician's instructions. Perhaps a partially invalided man needs lighter work, it is found for him; or someone needs orthopedic appliances, for which he cannot pay even the nominal fee charged by the hospital. The necessary money is advanced to him, and his efficiency as a wage earner is restored. Homes are cleaned, better food is procured, hygiene is brought in, where ignorance and filth reigned supreme. No matter on what the problem may depend, ignorance, poverty or crime, a solution is sought by steering or pushing the patient towards a better condition. The hospital wards are closely watched, and those patients who must leave the hospital well, yet unfit for work, are cared for in convalescent homes, until they can take up their life again with safety. The large class of so-called "neurasthenics," fall naturally under the care of this department. The cause of the trouble may often be found in the patient's mode of life, and the close association arising from the visits to the patient's home, the encouragement and suggestion coming from a sane, sound, and cheerful mind do much toward righting the condition, which has brought the individual down to the status of an "outpatient rounder," the thorn in the side of the outpatient physician, who cannot call a social service department to his aid.

The development of such work presupposes a leader with a mind trained for, and a personality adapted to social work; it needs a sufficient staff of workers, so that each case may receive due care and consideration. All this needs money, for the salaries of the workers, for relief funds, vacations, loans, and all the multifarious needs of such a system. Given such a department, the cooperation of the medical staff, and of the public should be quick and complete.

Those interested in the improvement in the health and hygiene of the community, which is, after all, an improvement in its economic efficiency, should be deeply grateful to the originators of this social service work at the Massachusetts General

Hospital. They have pointed the way whereby the hospital dispensary may cease from being a museum of interesting medical and surgical conditions, and whereby the flotsam and jetsam of our social system may be rescued from the overwhelming tide of circumstances, which is whirling them on to complete destruction. R. D.

One Method of Attack on Preventable Diseases.

An interesting editorial in the *American Journal of Public Hygiene* deals with the question of damage suits for typhoid fever, laid against a city on the same basis as if the victim fell into an excavation unmarked by a red light. The suggestion calling forth the editorial was a statement in the *California Board of Health Bulletin* that this condition of affairs was more or less certain to come. There have been statistics almost to the point of satiety as to the actual financial loss suffered by a city in the course of an epidemic of one of the *preventable* diseases, and the comparatively small sums which would have been adequate for the prevention of the epidemic, but for the most part, with occasional shining exceptions, the municipalities prefer to pay the damages rather than to prevent them. We take up subscriptions to help out the widows and orphans and decry the conditions that have led to their need, but it would seem that perhaps it is not properly a matter for charity, but for legal regulation. If a city, or a company, or an individual has such parts of its property as are accessible to the common public in such a condition that injury is thereby sustained, there is at once matter for a civil suit for damages, or if a druggist sells a poison in error for a harmless drug, the same is true, but the sale of a poison in the shape of a mass of infectious organisms is beyond the province of such suits, or at least is not brought up in this connection. There is a law in England which was intended to refer to the sale of unsanitary foods, and nothing further, allowing suits for damages in case of proof that the food was the cause of disease, but test cases were made and carried through successfully making companies selling water or milk for domestic consumption equally liable. Since then a number of such suits have been carried on, resulting in the awarding of very large sums in damages to persons who acquired typhoid from the use of infected milk or water. The result has been that the water companies are very much more careful of their supplies than formerly, since while it may be true that a corporation has no soul, it is a recognized fact that it has a pocket and has strenuous objections to any attacks upon it. While it is of course recognized that water supplies are by no means the only causes of typhoid in epidemic form, as also that milk is not alone in this respect, yet there are many cases in which the responsibility can be definitely traced to such a source and it would seem that such responsibility should rest on the person through whose carelessness the contamination took place. As suggested in the editorial referred to, a few successful prosecutions against municipalities or private concerns would do more to place public hygiene on a satisfactory basis than reams of publications. Education still remains the most important factor, but it may be true that even in this type of education, to spare the rod is to spoil the child, and it would assuredly bring the responsibility far more clearly to the minds of the suppliers of public commodities than any other method. The natural relation of the properly equipped sanitary officer to the public and to the practitioner is that of a consultant, and as such he would be of enormous value to the community. As often emphasized the victims of the acute infectious diseases are for the most part persons in the prime of life, at their highest working capacity, so that the long and terrible death list from these causes represents not the working out of the survival of the fittest, but a loss of the strength of the nation which cannot be made up in any way. It represents an enormous money loss to the community not only from the actual loss of so many actual workers, but also from the ever present needs of expenditure, both public and private, to care for the cases of distress caused by the removal of the financial support of the family. Should the municipality as such, through additional taxes on the individual, or the individual on the basis of charity, bear this admittedly unnecessary expense, or should it fall on the persons directly responsible, whether they are individuals, companies or public or private corporations? From analogy and perhaps from common sense the answer seems clear, and with education as to the causes of these diseases and the comparative ease of their prevention it seems not improbable that means to this end will sooner or later be adopted.

Stoking with Clinkers.

When one considers what a tremendous influence the commercial interests can bring to bear upon the legislators made by our present system or lack of system, the passage of the Federal Pure Food and Drugs Act had in it many of the elements of a triumph for the masses. But the mere enactment of a legislative measure does not at once actually remove all the abuses sought to be corrected by the law placed upon the statute books. While many manufacturers have obeyed both the letter and the spirit of the law, many more have tried in every possible way to evade the very just restrictions contained in the measure. The long struggle over the use of food preservatives is familiar to all. The scientific debate concerning the possible harmful effect upon the human organism of constantly repeated small doses of sodium benzoate has not been at all a pretty affair. Whatever may be the outcome of the argument the fact remains that the better sort of manufacturers have shown that tomato catsup, for instance, can be made without the use of preservatives. In spite of the strenuous struggles of those interests concerned more with financial profit than with decent business the Pure Food and Drugs Act has been well enforced and has done much good. The requirement of truthful labeling in the matter of adulteration affords protection to the consumer.

There is, however, a possibility that we may be lulled into a false feeling of security. The banal influence exerted by those interests which desire to coin an illegitimate percentage of gain out of human necessity may, perhaps, have been curbed—it has not been eradicated. Balked at one point evil commercialism successfully makes its way along another path and becomes more dangerous than ever to humanity. "Collier's," which labored so well against the patent medicine frauds, has recently called attention to an evasion of the Pure Food and Drugs Act which merits serious consideration. Adulteration and imitation having been regulated to such a degree as to prove unprofitable the manufacturer has turned to substitution. In the words of the article referred to: "Forbidden to use an adulterant, he has dropped it—and with it the food he used to adulterate. He now uses an unadulterated substitute, a cutting of the Gordian knot classical in its simplicity." The object seems to be to prepare finished food products not to be distinguished by the eye, or even by the taste, from such as are composed of fresh and wholesome materials.

That rotten eggs deodorized by formaldehyd will make a sponge cake lighter than that made from fresh eggs may be an interesting fact when looked upon as a scientific experiment—but it is not very flattering to one's sense of the esthetic. Egg substitutes are made of casein, of gum, of gelatin or of anything that will give the effect of egg when mixed with enough other materials in a finished product. Milk powder, to be used in place of milk, is made from milk so thoroughly skimmed that the honest farmer considers it fit only as food for hogs. Saccharin replaces sugar and artificial colors and flavors are substituted for the natural. All these things may be pure, but they are not what the patron of the restaurant thinks he is paying for and they have not the nutritional value of the substances that he supposes he is getting.

No doubt most of us eat too much, even of good food. The elimination of excessive waste must be a factor in the premature wearing out of the human machinery. When the material ingested is already waste, when the fuel fed the engine is trash whose consumption uses up inherent latent energy instead of giving a new supply, then the factor used in calculating the depreciation of the power plant must be greatly increased.

O. T. S.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Vaccine Treatment: Louis E. Schmidt, in the *Therapeutic Gazette* for September, considers the vaccine treatment in reference to gonorrhea and especially in the joint involvements. Admitting that Wright's work has been exceedingly fascinating and scientific, and that his means of accurately estimating the opsonic content of the blood is a guide in the therapeutic use of bacterial vaccine in Neisserian infection, it must also be admitted that there is still great lack of conclusive evidence as to the beneficial effect or the true value of gonorrheal vaccine therapy. As to the dosage of vaccine and antigonococcic serum, up to the present time there are no maximum or minimum doses of either. His main conclusions are: (1) That the site of the injections of either the serum or vaccine is of no importance as to the therapeutic action, yet on account of local symptoms that may arise the deep or intramuscular mode of administration, particularly into the gluteal region, is both the most desirable mode, and place, for the injection. (2) That the technic to be followed is one which requires strict asepsis. (3) That satisfactory results have been noted with the use of serum, as well as with vaccine, in various kinds of cases. (4) That antigonococcic serum seems to be used to the greatest advantage in acute or subacute gonorrheal cases, those cases so often referred to as "gonorrheal rheumatism"; and that serum is of no practical value in the inveterate, long standing cases. (5) That the vaccine mode of therapy has shown satisfactory results in the true gonorrheal arthritic conditions, in which undoubted metastatic conditions are present, and in which a gonococcemia is probably present. In the very acute attacks especially good results were noted, yet it is also to be recommended in the subacute and chronic cases of this type. (6) That serum therapy has not been of as great value in the metastatic or gonococcemic conditions; that vaccines are to be used in these cases with greater expectations. (7) As to the dosage of serum, it is desirable to commence with small doses, as 2 c.c.; to repeat or even to increase to 4 c.c. on the second or third day; if no improvements are noted to increase to 6 or even 8 c.c. to be given every fifth day. In general the smaller the dose, the more quickly can it be repeated; the larger the dose, the greater the interval between injections. Furthermore the large majority of cases require fully 30 to 50 c.c. of serum. (8) That the dosage of vaccine must vary as to the case—comparatively small doses 10,000,000 to 30,000,000 bacteria for the acute gonorrheal joints are usually sufficient. In the subacute or chronic cases 30,000,000 to 50,000,000 bacteria have shown the best results. In both instances he is inclined to believe that the best results were noted when injections were given about five days apart.

Rectal Infusions: Henry Sewall, in the *American Journal of the Medical Sciences,* reports on the medical uses of rectal infusions of either tap water or normal saline solutions, as the condition of the patient seems to demand, one or two pints of fluid, rather hot to the touch, placed in the bag of a fountain syringe and introduced into the rectum through the hard rubber tip commonly used for enemas. The bag was usually suspended so that the surface of fluid within it should be elevated six to eight inches above the anus. The bag is raised or lowered according to the rate of outflow or complaints of the patient, and nearly two pints of liquid should flow out in the course of an hour. The temperature in the reservoir may be maintained by the addition, now and then, of very hot water or saline solution. In practise it has been his habit to judge of the utility of the method, largely by the reaction of the kidneys. Abundant diuresis has been accepted as a sign of the efficiency of the procedure, or vice versa. Instead of continuous proctoclysis, as commonly employed by the surgeon, he has usually sought the absorption of a quart of fluid, twice daily, in the forenoon and afternoon. The cases may be divided into two groups: (1) Those in which it is desired to raise arterial blood pressure, or by stimulating diuresis, to deplete an effusion. (2) Those in which it is endeavored to reduce toxemia. In the first group two cases gave striking results. One was that of a man of middle age, probably an old alcoholic, prostrated with an asthenia of uncertain origin. Here proctoclysis to the extent of two quarts of saline solution daily, seemed an important aid to his gradual recovery. The other was that of a man of 60 years with pleural effusion, general dropsy and orthopnea of myocardial origin. Hot water given by the "drop method" resulted in a progressive diuresis, which in a few days removed the dropsy and led to recovery of cardiac compensation. Other attempts to reduce dropsical effusions by proctoclysis have not been so successful, but the conclusion from a considerable experience favors the exhibition of hot water by the bowel in an effort to reduce dropsical accumulations which do not yield to other remedies. Of course a comparison of this volume of fluid absorbed with that excreted, quickly determines the availability of the method. The second class of cases, those suffering from constitutional toxemia, offer the most pertinent field for proctoclysis. His experience with it in typhoid fever has been favorable, but is based on only a half-dozen cases. In a similar number of cases of lobar pneumonia, one an alcoholic with extensive lung involvement, high temperature and wild delirium, he was much impressed with the favorable effects. When proctoclysis with hot tap water was made at herapeutic measure, no class of cases has been more obviously ameliorated than those patients suffering from delirium, and he has seen rapid clearing up of the mental condition in obstinate cases of delirium tremens. He has used saline infusions in four cases of scarlet fever, two of them very severe, and the results were admirable. The casts and albumin, found in the urine early in the disease, disappeared before the patients were ready to leave their beds. In a number of cases of chronic pulmonary tuberculosis having a daily rise of temperature, he failed to see decided benefit from proctoclysis, but in an intercurrent febrile "grippal" attack, the comfort of the patient was greatly increased and the invasion apparently cut short by the procedure.

Hexamethylenamin: Wilfred M. Barton, in the *Monthly Cyclopaedia* for September, reports concerning the effect of hexamethylenamin, especially as to its value in middle ear suppuration, as well as to its elimination in the secretions of the nasal sinuses. The drug is not poisonous, but in man some undesirable effects are known to have occurred. Hematuria is the most common symptom, or complication, and its occurrence does not appear to always coincide with the size of the dose Albuminuria is rare, and the same is true of skin eruptions. He concludes: (1) Hexamethylenamin is eliminated by the mucous membrane of the middle ear and accessory nasal sinuses. (2) The drug is of service in acute suppurating otitis media, all the patients being apparently rapidly cured. The chronic cases were ameliorated, no absolute cure being noted in a limited number of instances. (3) Upon *a priori* grounds it may be assumed that hexamethylenamin may prove to be a valuable prophylactic in those diseases commonly attended by otitis media; perhaps also a prophylactic if used prior to surgical operations upon the middle ear or mastoid and the sinuses of the nose.

Bacterin Therapy: In the *International Clinics* (Series xx, Vol. iii) B. A. Thomas summarizes the present status of bacterin therapy. It has been true with bacterin therapy, as with the discovery of Koch and tuberculin therapy and with almost every important advance in medicine, that the pendulum of applicability at first swung through too great an amplitude. Practically, the opsonic index in the majority of cases runs parallel to the clinical symptomatology, and although it is usually unnecessary to employ the index as a guide, there are some cases in which dependence upon it is absolutely essential to attain the highest success; it is apparent then that the opsonic index is of value in some cases of bacterin therapy. Concerning the relative values of the opsonic index and clinical symptomatology as guides in the administration of bacteria therapy, it is his firm conviction that the clinical symptoms are of primary importance, and that the index must be relegated to second place. It is utterly out of the question for the average clinician to master the bacteriology and technic required for the reliable determination of the opsonic index, consequently bacterin therapy, in order to enjoy the popularity which is its due, must be governed by the subjective and objective signs and symptoms. It is natural to suppose that the best results in immunization are to be secured by employing autogenous cultures. Experience has already justified this procedure, although there are two exceptions *B. tuberculosis* and *M. gonorrhea*, organisms which owing to cultural characteristics and other difficulties render it inexpedient to attempt the preparation of an autogenous bacterin. As regard the streptococcus, excellent results are reported from the use of stock bacterin preparations, especially when the bacterin is polyvalent, i. e., composed of several strains. Cases adaptable to bacterin therapy may be classified: (1) Acute, subacute or chronic. (2) Febrile or non-febrile. (3) Those in which the infection is localized or general. (4) Those in which the lesion is superficial or deep. *Those cases in which bacterin therapy is positively contraindicated, are the diffuse infections, characterized by septicemia, pyemia or grave sapremia.* A burning question in bacterin therapy at the present time is that referable to anaphylaxis. It is not difficult to produce a state of hypersusceptibility of the organism. He is inclined to believe that better results have attended the process of active immunization, when, just as in tuberculin therapy pure and simple, the treatment has been started with relatively small bacterial inoculations, progressively increased in the therapeutic limit, than when there has been recourse to large dosage, thereby in the former case, establishing immunity and in the latter avoiding hypersusceptibility. In a general way it may be stated that the inoculations of bacterin may be administered every five to 13 days, depending upon the clinical symptoms or additional evidence adduced in some cases from the determination of the opsonic index. The size of the dose must be controlled in the same manner, as no hard and fast rule can be laid down. He emphasizes the statement that bacterin therapy is merely a valuable accessory to nature in the art and science of healing, and is not a "cure all." Anxiety on the part of the therapeutist to *push the treatment* when beneficial results become apparent, will lead not only to failure but to disaster, and place a therapeutic measure of great worth in disrepute.

Trypsin Therapy: The *Medical Record* for Oct. 8 comments editorially upon the treatment of tuberculous abscesses, hygromata, enlarged lymph nodes, etc., by proteolytic enzymes, which has now been studied systematically for two years or more. There is abundant evidence that the treatment often gives satisfactory results. While various enzymes have been employed, it would appear that one percent trypsin solution gives as good results as any other form of enzyme. The number of reports on this subject is relatively small when we consider their favorable character, and so far no unavoidable reports have been published. Brüning reports his conclusions recently *(Deuts. med. Wochenschr.)* and finds trypsin of value in small suppurating foci in bony tissue. He agrees with others in finding it of value in cold abscesses, but limits its use to small stationary lesions. In burrowing abscesses he can not see that it is in any way superior to iodoform-glycerin. In joint tuberculosis as well as in large foci in bone, he finds it unsuitable, and this is also true for caseous lymphatic glands. It seems a fair generalization to say that trypsin accomplishes nothing in caseous or proliferative lesions. His technic differs somewhat from that ordinarily laid down. He punctures the abscess outright with a trocar and evacuates it. The trypsin solution is then thrown in, although some authorities have injected the ferment directly into the unevacuated pus. It doubtless acts by peptonizing the residue of old pus as well as newly generated pus. He has treated over 100 cases of local tuberculosis in this manner. He repeated the injection at about weekly intervals if indicated, and has never encountered anaphylaxis, or a drug exanthem as a result of trypsin injections. The *Record* states further that, without going more deeply into the matter, we may look upon the trypsin treatment of local tuberculous foci as at least on a par with the old iodoform absorption treatment. Most surgeons undoubtedly favor the most radical treatment of local tuberculosis, and many refuse to temporize or to attempt palliative measures in such matters. But progress and conservatism are often happily allied, and this appears to be the case with the subject in question.

Antityphoid Inoculation: In the *Journal A. M. A.* for Oct. 1, Geo. H. R. Gosman considers the present status of antityphoid inoculation. His conclusions are that considering all the data presented it seems that the present status of the inoculation against typhoid fever is that it is valuable as a method of preventing the disease, and is, perhaps, the most valuable single asset we have in combating an epidemic. There is surely no doubt in the minds of most thinking and up-to-date medical men that it should be used in the following classes of persons: first, all nurses, ward attendants, hospital corps men, red cross assistants, physicians and medical students; also all persons who contemplate a trip into a section where typhoid fever is known, or is suspected, to exist. The inoculations should also be done generally in districts suffering from an epidemic, and especially in the families in which a case exists, and at time of war all volunteers at camps of concentration should be inoculated as soon as possible after the camp is started. He believes the necessity for anti-typhoid inoculation will always be with us, for no matter how careful we are of our sanitation, our milk, our water, our flies, our contact infection, we will always have one or more of the chronic typhoid carriers, and it is only by inoculating them that we can keep more or less free from typhoid. He is convinced of the harmlessness and at the same time of the effectiveness of this procedure, and recommends its universal adoption so that our armies in time of peace and war, and our communities at all times may be kept as free as possible from that terrible epidemic disease, typhoid.

Ergot: In the *Archives of Internal Medicine* for October, Horatio C. Wood, Jr. and Clarence Hofer report the results of an experimental study on the pharmacology of ergot. They summarize the important facts brought out as follows: (1) Ergot is a stimulant to the unstriped muscle tissue of the body. (2) As a part of this general action there is a stimulant effect on the arterial muscle, and probably also on the heart. (3) The action on the blood vessels occurs after the destruction of the vasomotor center, and must be therefore the result of an effect on some portion of the peripheral vasomotor mechanism. (4) The degree of elevation of blood pressure affords an accurate criterion of the biological assay of the drug. (5) The active principle of ergot is an alkaloidal substance which occurs in the drug probably in chemical union with a resinous body: for the combination they suggest the retention of the name suggested by Jacobi; of sphacelotoxin, and for the alkaloidal substance, the term applied by Kraft of hydro-ergotinin. (6) The percentage of sphacelotoxin varies accurately with the physiological activity of different specimens of ergot. The percentage of sphacelotoxin in a fluidextract may be easily estimated by precipitating with water and extracting with benzol. (8) A fluidextract of ergot exposed to the air deteriorates extremely rapidly. The deterioration of fluidextract may be much retarded by protecting it against contact with the air, but under the most favorable conditions there is a loss of strength approximating 10% a month.

Poliomyelitis: In the *Medical Record* for Oct. 15, Henry Ling Taylor presents some practical points in the management of poliomyelitis and its sequelae. The most important indication in the first four to six weeks is rest in bed, to avoid irritating the site of the lesion, and to give the antitoxic forces of the body an opportunity to limit or repel the infection. He emphasizes, (1) the not infrequent occurrence of poliomyelitis in adolescents and adults; (2) the fairly frequent occurrence of abdominal palsy; (3) the uselessness of massage and electricity; (4) the value of rest in bed in the early stage, and of orthopedic and surgical treatment both early and late; (5) the necessity for a systematic statistical investigation by State societies, and boards of health.

Academy of Medicine of Cleveland.

CLINICAL AND PATHOLOGICAL SECTION.

The seventy-first regular meeting was held at the Cleveland Medical Library Friday, October 7, 1910, C. W. Stoner in the chair.

The program was as follows:

1. Nevus, with Special Reference to a Case of Rapid Growth, J. V. Kofron. (To appear in full in the Journal).

W. I. LeFevre reported a case of nevus, not showing rapid development but rather the narrow escape the child had had from a very extensive growth. The patient, a beautiful little girl about 12 years old, was referred to him about a year ago with a nevus that covered most of the lobe of the left ear, a spot about the size of the little finger nail on the left temple and a smaller spot on the side of the nose. She had been and was still under treatment with carbon dioxid ice and electrolysis. The original spots were doing very well but during this time many of the little arterioles on the upper left side had broken down enough to require the electric needle, showing the narrow escape of the patient from a very extensive nevus.

2. The Support of the Pelvic Viscera, E. O. Houck. (To appear in full in the Journal).

W. H. Weir referred to the difficulty in recognizing the various perineal muscles when the perineorrhaphy was performed long after the injury was sustained, but pointed out that their identification was usually unnecessary as the levator fascia was really the important structure to suture, just as was the fascia in the case of the anterior abdominal wall. The fact that the integrity of the perineal fascia was most important in preventing descensus or prolapse of the uterus, and that the broad and other ligaments played but a secondary part, was shown clinically by the excellent results obtained in the great majority of cases of relaxed vaginal outlet with beginning prolapse, if only the pelvic floor were repaired: the relaxed ligaments would usually recover their tone if this were done and only in exceptional instances was it necessary to deal specially with them. Such an instance might be found in aggravated prolapse of the uterus in which, owing to a suspicion of malignancy, an excessive hypertrophy, or a bad cervical laceration, it seemed best to do a vaginal hysterectomy—in such a case it was highly advisable to suture together the bases of the broad ligaments and to attach them to the vaginal vault, if this were not done the vaginal walls might again prolapse even if the pelvic floor were repaired.

E. O. Houck, in conclusion, said that he had purposely omitted any reference to the practical details of the operative repair, and he agreed that it was very difficult to identify the various perineal structures at subsequent operations. There should be a routine examination made several weeks after every confinement to determine the amount of damage done to the perineum. It was impossible, in many cases, to estimate this accurately at the time of the labor.

3. Chronic Lead Poisoning as a Diagnostic Factor in Acute Appendicitis, Ivan I. Yoder. (Appearing in full on page 764).

EXPERIMENTAL MEDICINE SECTION.

The fifty-first regular meeting was held at the Cleveland Medical Library, Friday, October 14, 1910, C. F. Hoover in the chair.

The program was as follows:

Psychoses Associated with Acute Infectious Diseases (Illustrated with lantern slides). Prof. Albert M. Barrett, A. B., M. D., Professor of Psychiatry and Diseases of the Nervous System, University of Michigan. (To appear in full in the Journal).

W. T. Howard, in the discussion, said that these changes found in the nerve cells in acute infectious diseases very closely resembled those which could be induced by exhaustion due to overstimulation. In many respects the nerve cell was analogous to a secreting cell, e. g., a pancreatic cell. In both, the nucleus constantly supplied chromatic material to the cytoplasm to be made use of by the latter. On stimulation certain definite changes took place in the nerve cell, varying somewhat with the type of cell and the nature of the stimulus: the extranuclear chromatic material was first increased and if the stimulation were continued the nuclear chromatic material became diminished in amount and the nucleus increased in size. On still further stimulation the Nissl substance became still more used up and the typical "fatigue" appearance was induced in the cell; in extreme grades the nuclear chromatic substance almost or completely disappeared and even the karyosome of the nucleus took the eosin stain; the cell was greatly enlarged, the protoplasmic meshwork swollen, vacuolated and pale, the nucleus was also much swollen and might even rupture. These changes had been produced experimentally in the laboratory here by Dolley, Sloan, Austin and others and could be induced by overstimulation of various kinds, including shock and toxic agencies. In most of the cases reported by the speaker the infections had reached the subacute stage and several of them were evidently streptococcus infections, which would be expected to produce such results, but in acute infections similar changes could be noted as he had discovered in a case of acute tetanus. Since the ganglion cells responded in such a specific manner to exhausting stimuli of very varied nature it was only reasonable to expect that they would react in a similar way to bacterial toxins. It was evident from the speaker's description and pictures that he was dealing with nerve cells in various degrees of exhaustion.

Professor Barrett, in conclusion, said that while in all these cases of infectious diseases there were very striking changes in the nerve cells, it was not an easy matter to determine just what the relation of this or that change might be to any disturbance of function which might have been present in the cases. It, however, seemed possible to conclude that in certain cases running a mild course one found less changes in the nerve cells than in other cases in which the course was more turbulent. In the more severe cases, or in these cases running longer courses, one found not only nerve cell alterations but also active proliferative phenomena in the neuroglia and changes in the blood vessels. The pathological alterations in these cases of infectious diseases were interesting in their bearing on mental disturbances in general in that here one was dealing with very definite etiological factors.

ACADEMY MEETING.

The seventy-seventh regular meeting was held at the Cleveland Medical Library, Friday, October 21, 1910, the President, C. B. Parker, in the chair.

The following were appointed a nominating committee: F. E. Bunts, T. Sollman, A. F. Furrer, W. J. Esch and W. H. Weir.

The program was as follows:

1. Cerebrospinal Meningitis, with Special Reference to its Diagnosis and Treatment, Louis W. Ladd. (Appearing in full on page 868).
2. The Special Field of Neurological Surgery: Five Years Later, Harvey Cushing, Baltimore, Md. (Appearing in full on page 827).

G. W. Crile, in opening the discussion, said: "If I could construe my duty in opening the discussion on the address of Dr Cushing as an opportunity of pointing out the influence his creative work has had, not alone on neurologic surgery but its influence on general surgery or, I may with greater propriety add, upon general medicine as well, I could employ agreeably to myself the short time at my disposal, and add something of a greater interest to this audience.

"I am sure that were I to add to the names of Kocher, Sherrington and Halstead, mentioned by the speaker as models for emulation in scientific work, that of Cushing, every member of this audience would approve. Kocher's work on the thyroid, Sherrington's on the integrative action of the nervous system, and Halstead's studies of cancer of the breast show no advantage in patient accumulation of accurately observed phenomena, from which fair deductions are made, than the experimental and clinical researches upon the subject presented tonight to us.

"Such a presentation shows us even more clearly that no part of medicine is unrelated to every other part, and that, as we are gaining possession of more facts, we are viewing medicine less as a collection of therapeutic formulae, and practising it less as a ritual. If my own solicitation five years ago influenced in any degree the presentation of the first paper, this audience is by that much my debtor for the 'Five Years After' of tonight. This paper, made up so largely of summaries of a vast amount of work done, leaves but little opportunity for discussion by those of us who "coquette" with the central nervous system.

"In the technic of decompression, the incision for the exposure of the Gasserian ganglion, indeed in many of the practical points in the technic, I have had a practical reason for expressing the obligation of the general surgeon. An experience of 22 excisions of the Gasserian ganglion enables me to agree fully with the statement that this operation gives remarkable relief and constitutes but a slight risk. I have also found the use of urotropin in large doses in fracture of the base of the skull, and in beginning or threatened meningeal infections, apparently attended with good results. In several of Dr Cushing's patients, notably in operation for birth hemorrhages, I have had the opportunity of observing the gratifying results.

"The group of remarkable successes in the removal of tumors of the brain is only possible by the combination of expert clinical knowledge and a finished technic, which implies, so to speak, a highly trained environment. I should like to ask Dr Cushing what his experience has been as to the physiologic compensation of a loss of a part of the cerebellar tissue by operation? I should like further to ask what location of tumor was most favorable for removal? As for myself, I feel unqualified to add, in the way of discussion, anything of interest to the masterly address, but I can not close without expressing my personal obligation and the humble tribute of my respect for the monumental work presented in the address."

W. B. Laffer said: "Dr Cushing has shown us tonight that he has a masterly grasp of the neurological field from a surgical point of view. One cannot secure such a grasp without years of painstaking study of the anatomy and physiology of the nervous system together with intimate acquaintance with the clinical manifestations of nervous diseases. There seems to me no doubt of the need for a neurological surgeon, for this is not a narrow field, on the contrary it is almost too extensive for any one person to do justice to.

"The nervous system is the most difficult part of anatomy and of physiology to grasp. Great anatomists and physiologists are almost helpless when they encounter clinical manifestations of a deranged nervous system. It is therefore necessary for a neurological surgeon to not only master the modern surgical technic, but he must know the anatomy and the physiology of the nervous system and acquire the diagnostic ability of an expert neurologist. To do this one must have a broader training than is required by all other surgical work. It is needless to say that there are very few surgeons with this equipment. It is impracticable for the surgeon to rely on the average clinician's neurological knowledge, for students graduating from even the very best medical colleges have very inadequate knowledge of neurology. It is hardly possible for the general surgeon to always have a neurologist at his elbow when he encounters a neurological problem at the bedside. In many instances the general surgeon might have a neurologist see a case before operating and so avoid the errors so commonly made in this field. A good neurological examination will often require two or three hours at the hands of an expert, not to speak of any laboratory work that might be required. There is too often an operation without such careful study of the case. To use Dr Cushing's term, it certainly is 'surgical foolhardiness' for a man poorly equipped to undertake operations in a neurological field.

"It is unfortunate that almost 90% of the medical students of today have surgical aspirations and see nothing attractive but the operative side of medicine. Therefore, they begin to do major operations and often those involving such delicate structures as the brain and cord without any adequate training in general and neurological diagnosis. It is very hard to develop a good internist and still harder to train a neurologist. I believe that the anatomy, physiology and pathology of the nervous system should be taught at the bedside of patients suffering from nervous diseases. Otherwise it seems impossible for the students of these subjects to see the practical side of their work and unless they can make their knowledge practical and useful it soon drifts from them.

"A lack of neurological knowledge on the part of gynecologists has done more harm to their specialty than can easily be estimated. It is not uncommon to see a surgeon operate on a Charcot joint without any knowledge of the character of the trouble. It often makes one shudder to see the way the surgeon handles the brain and cord. They do it with the same manipulations that they are accustomed to use in abdominal work. Even the pathologist in removing these structures ignores their delicacy and thus probably many artefacts are produced. Many surgeons seem not to understand about nerve suturing and often do more than a little harm with the scar tissue that they produce. It is appalling to see the way brain puncture is carelessly carried out by the general surgeon which results but too frequently in hemiplegia. Surgeons are doing decompression operations for almost everything without having any knowledge of the neurological signs manifested by the patient. They are as liable to decompress on the left side as on the right; often making too small an opening, thus favoring a tear in the cortex if there is great bulging, and then, if there is any oozing, packing in gauze until there is more intracranial pressure than was present previous to the operation.

"We must not forget what Horsley says about the subtemporal region being the one where operation is most likely to be accompanied by shock. He says more shock is present in the area below a line drawn from the frontal eminence to the occipital protuberance than in the region above. He also says that shock increases as you go from the frontal to the cerebellar pole and is especially liable to follow subtentorial decompression owing to the proximity of the bulb centers. He says that death from primary shock occurs once in 12 cases of subtemporal decompression.

"It is a common error to decompress without opening the dura. Too little care is manifest in securing resistant coverings of muscles and fasciae. Blood pressure records before, during and after cranial operations are not as common as they should be.

"From a neurological point of view there seems to be a reaction in the way of too much boldness in the neurological work by the general surgeon. Not long ago we saw the other extreme, and it was very difficult to get a surgeon in Cleveland to operate for a tumor of the cord, largely on account of the fear of laminectomy and to the fact that they had not sufficient knowledge to confirm the diagnosis.

"I believe that Dr Cushing's advice about using ether in place of chloroform is a very wise one. I wish also to lay stress on the point he makes about brain tumor operations being done in two or three stages, as it is too often a temptation to hurriedly and unwisely try to find and remove the growth at one time. I also agree with what he says about using antisyphilitic treatment too long in cases of brain tumor, and would add that when it is used I usually find that it is not in an energetic manner. It is probable that when urgent signs such as papillitis are present an operation should be done before trying antisyphilitic treatment.

"Too many physicians believe that they can exclude choked disc if the patient does not complain of poor eyesight. Everyone should be taught to use the ophthalmoscope and make it a part of the routine examination. For there is truth in Gowers' statement that no one is fit to practise medicine that cannot use it. Examination of the color fields urged by the essayist and others is a very important point.

"I believe a common error is to wait for localising signs too long before advising at least a decompression operation.

"As to the frequency of brain tumors Oppenheim says that they are as frequent as other growths and adds that by the expert they may be as accurately diagnosed as cardiac lesions. It is gratifying to see the good results Dr Cushing reports from his operations, for in 100 cases, 30 cures, 13 deaths and 67 palliative results show that we should not take such a hopeless view of these cases.

"I too wish to say a word of caution about lumbar puncture being used without weighing the dangers of wedged foraminal hernia or a displacement of the pons such as Lambert reported. Lambert found the pons displaced after lumbar puncture so as to cause disastrous effects on the circulation of the tegmentum of the midbrain through interference with the posterior perforating vessels.

"I have confidence in what Dr Cushing says about decompressing for migraine, but fear the prostitution of this measure to relieve all sorts of headache.

"In regard to intracranial hemorrhage after trauma and in the newborn, I think every case of severe head injury should be studied by one trained in neurology and detailed examination of the eye grounds, frequent blood pressure tracings and a study of the cerebrospinal fluid should always be carried out. One must not overlook the dangers of hemorrhage occurring in the newborn, even with precipitous labors, and one should be on the lookout for signs of intracranial disturbance when the child does not learn to nurse, and has twitching of muscles, bulging fontanels and syncope-like attacks. Cerebral hemorrhage should certainly be operated on in selected cases, as well as many patients suffering from pachymeningitis hemorrhagica and so-called wet brain.

"Halben and others report good results from operation on hydrocephalus.

"So few cases of epilepsy are benefitted by operation that it seems to me discouraging, Kocher's views notwithstanding.

"Dr Cushing makes a good point in recommending decompression of the cord for intramedullary tumors.

"Many surgeons, it seems to me, unwisely refuse to operate for partial transsection of the cord, but it is probably better not to do so than to subject the tissues to the operative trauma so commonly seen when there is lack of knowledge of the delicacy of nerve tissue.

"I am pleased with his statement as to the repair and strength of the spine after laminectomy, when the periosteum is retained.

Division of the posterior roots for spasticity reminds me of a case I had in which an infantile hemiplegia had created great spasticity and contractures and a subsequent tabes relieved this condition and allowed the leg to straighten out and the heel to touch the ground.

"We should be deeply indebted to those like Dr Cushing who have blazed the way for us in this difficult field of medicine."

C. W. Stone said: "The facts presented by the recent speaker seem to justify his position as an advocate for specially trained men to take up the work in neurological surgery. To anyone who stands even at the edge of this broad field of neurology, and but peers out over it, there can scarcely be doubt in his mind of the need of surgery especially applied to this domain as well as to other regions of the human anatomy.

"Neurology and surgery have been distant from, and distant towards one another. Only more recently have we seen them tending to approach each other to the same degree as have medicine and surgery. No doubt one important reason for this may be the fact that surgery as applied to the nervous system has, in the past, appealed to the average surgeon just about as much as a keen appreciation of the physiological, pathological, and one may add the anatomical as well, features of the nervous system appealed to the average physician; that is neither has been particularly interested in the subject. For this reason the medical man has not been keen upon picking out those cases suitable for surgical measures, nor has the surgical man been keen upon broadly utilizing such opportunities as came his way. In this manner much of the progress towards a better understanding of the physiology of the nervous system in particular, and also earlier pathological states has been considerably hindered in its advacement.

"Considering this lack of meeting ground for the neurologist and surgeon is it surprising that too often measures have been unsatisfactory alike to the patient, to the surgical man, and to the medical man?

"Tonight we have had the pleasure of listening to one who has done much to further the closer general working relationship between clinical neurology and surgery. His splendid work in emphasizing diagnostic points to enable an earlier palliative or curative operative procedure in brain tumor as well as his brilliant technic in such operations deserves wide recognition by surgeon and physician alike."

THE OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION.

The forty-eighth regular meeting was held Friday, October 28, 1910, Edward Lauder in the chair.

M. D. Stevenson explained the use of gauze drain cylinders in discharging ears. The cylinders are small and round, made of absorbent gauze, and can be left in the ear for some time.

W. E. Bruner reported three cases of a rare form of optic neuritis (Druzen) in which there is hyaline material on, and partly in, the disc. Test charts for taking the light sense were also shown.

E. Lauder reported a case of rupture of the choroid.

J. E. Cogan presented an eye which he had removed for melanosarcoma, and showed microscopic slides of the same.

COUNCIL MEETING.

The Council of the Academy of Medicine of Cleveland met Wednesday, October 26, 1910.

The following names were ordered published: For active membership, G. S. Glass, J. C. Fox, F. E. Cutter, W. T. Miller, J. MacLachlan, G. B. Farnsworth. For non-resident membership, N. Culbertson, Massillon, Ohio.

The following were transferred from active membership to non-resident membership: H. W. Horn, J. M. Waugh and A. Minig.

A. J. Brockett was placed upon the retired list.

It was voted that a committee of three be appointed by the chair to confer with a committee from the Board of Education to arrange for a series of lectures to school children. R. E. Skeel, Chairman, R. G. Perkins and A. S. Storey were appointed.

It was voted that the chair appoint a committee of three to draw up resolutions on the death of N. Rosenwasser. J. J. Lowman, Chairman, J. F. Hobson and H. O. Feiss were appointed.

It was voted that the chair appoint a committee of two to serve in a campaign for the prevention of unnecessary blindness. A. H. Bill and C. C. Stuart were appointed.

The Secretary was instructed to publish and send to members of the Academy the vote of the Cuyahoga Delegation on the Optometry Bill.

The following letter was sent:

''The Council of the Academy of Medicine of Cleveland desires to call the attention of the members of the Academy of Medicine to the following facts in regard to Senate Bill No. 51, entitled "A Bill to Regulate the Practice of Optometry."

"The Cuyahoga Delegation voted as follows:

"Senate: For, Senator Phare. Senator Mathews, absent. Senator Mendelson, not recorded.

"House of Representatives: For, Mr. Buckingham, Mr. Carabelli, Mr. Didham, Mr. Edward, Mr. Eubanks, Mr. Evans, Mr. Moritz, Mr. Norris, Mr. Schaefer, and Mr. Schaibly. Against, Mr. Calvey.

"Governor Harmon vetoed the Bill. The Academy of Medicine recommended that the bill be defeated."

Book Reviews.

The Story of the Bacteria and Their Relations to Health and Disease. By T. Mitchell Prudden, M. D. Second edition, revised and enlarged, illustrated, 1910. G. P. Putnam's Sons, New York and London. Price 75 cents.

This little volume is a noteworthy attempt to popularize the new knowledge about bacteria and their relations to disease. The book is brief, concise, and yet thoroughly readable. While it is within the grasp of any moderately well-educated person, even if his knowledge of things medical is of the most elementary sort, the subjects are treated in a manner sufficiently full to satisfy almost any lay reader. The text is illustrated with 13 excellent plates and 15 small diagrams showing forms of bacteria, methods of making cultures, and the action of bacteria on diseased parts. Each new term as it is introduced is carefully explained, and so clear is every point made that any conscientious reader could not fail to grasp it. The book opens with an explanation of cells, their development and activities. Next comes a description of the forms, modes of life, and general activities of bacteria; their many uses in nature and the hundreds of varieties which inhabit the human body. There is here an interesting chapter on the uses of bacteria in agriculture. In the latter part of the book, treating of the pathogenic bacteria, each of the well known contagious diseases is taken up in turn. The kind of organism which induces the disease is described, its mode of entrance into the body, and its behavior after entrance are explained. In each case particular stress is laid upon the degree of possible communication of the disease from one person to another, and the methods of such communication. Especially good is the chapter on the tubercle bacillus and the prevention and cure of tuberculosis.

Another chapter is devoted to the house fly, repeating the suggestion that its name should be changed to the *typhoid fly*. Altogether this is a book which should be widespread among the people. Moderate in tone, it will not needlessly terrorize; simple in its recommendations for precautions against disease it will not discourage the well-meaning from such efforts as they are able to make. It is also so attractive in appearance and so innocent looking with its dark green binding and large clear type on heavy paper that even the frivolous would not be frightened off from reading it.

It should he known and recommended by physicians, and might even be used as a text and reference book in high schools. E. B. P.

Dust and its Dangers. By T. Mitchell Prudden, M. D. Second edition, illustrated, uniform with the above on bacteria. G. P. Putnam's Sons, New York and London. Price, 75 cents.

Here again are repeated the attractiveness of form, clearness of style, readableness and simplicity which are found in the first book. It is a sequel to the "Story of the Bacteria," for though complete in itself and entirely self explanatory, it can be much more intelligently read after the other. The theme is in-doors and out-of-doors dust, what it is and how it may be dangerous. The bulk of the book is given up to the discussion of the spread of tuberculosis by dust, and very striking are some of the paragraphs dealing with this subject. The whole book is a plea for that kind of good citizenship which will insist upon proper cleaning of public assembly places, and proper methods of street cleaning. All over the United States we might have clean cities and honest health boards if every voter would do his simple duty. The terrible statistics of tuberculosis all over the world are made very prominent and impressive. Indeed the peace of mind of the "gentle reader" is nowhere spared, so that though he may be highly disgusted with "Dust and its Dangers," he can no longer remain indifferent to them. Both these little books are unusually good popular expositions of those things which every person ought to know for the general good. E. B. P.

American Practice of Surgery. A Complete System of the Science and Art of Surgery, by Representative Surgeons of the United States and Canada. Editors, Joseph D. Bryant, M. D., Albert H. Buck, M. D., LL. D., of New York City. Complete in eight volumes, profusely illustrated. Volume seven. Wm. Wood & Co., New York.

This volume is a continuation of Part XVI, Regional Surgery. Chas. H. Peck, of New York, contributes a chapter on Surgical Diseases and Wounds of the Pelvic and Gluteal Regions. Deformities and lesions of the pelvic bones, and congenital deformities of this region receive special attention. Surgical Diseases of the Extremities, by C. A. Porter and Wm. C. Quinby of Boston, deals with certain minor disorders, such as x-ray dermatitis, finger infections, etc., which do not fall under any special heading in the previous volumes. A short chapter on Surgical Diseases and Wounds of the Abdominal Wall, by J. D. Griffith of Kansas City, follows, and a few pages by M. L. Harris, of Chicago, take up in a general way the Diagnosis of Tumors of the Abdomen. Abdominal Section, by W. M. Mastin, of Mobile, is devoted to a very good general consideration of this procedure, e. g., preliminary and postoperative care, drainage, location of and methods of making and closing the incision, etc.

A notable chapter of nearly 200 pages is that upon Surgery of the Pericardium, Heart, and Blood Vessels, by R. G. LeConte and F. T. Stewart, of Philadelphia: this field which has thus far presented so many obstacles to operative procedures offers great possibilities for the future. The progress so far made has been carefully collated and the literature upon the subject has been admirably reviewed. A. J. Ochsner, of Chicago, has written a very lucid and readable article on Surgical Diseases and Wounds of the Stomach and Esophagus: his wide experience as an operator upon these conditions is evidenced in the clear cut indications for, and the detailed descriptions of the various measures advised. Surgical Diseases of the Diaphragm and Subphrenic Abscess has been very thoroughly considered by J. C. Reeve of Dayton. A number of illustrative case reports of his own and from the literature are used to elucidate these rather unusual conditions.

The late Andrew J. McCosh, of New York, has admirably handled the important topic Surgical Treatment of General Septic Peritonitis. The vexed questions as to when to operate and how thoroughly the operation shall be carried out have been very judicially dealt with and the perusal of this chapter can be specially recommended to those whose experience in this field has been limited. The same writer has contributed some 80 pages upon Inflammatory and Other Diseases of the Vermiform Appendix, a topic which deserves the care that has been bestowed upon it by the author.

In the chapter on Tuberculous Peritonitis, Nathan Jacobson, of Syracuse, presents in a very satisfactory way the conflicting views as to the necessity for operative treatment in this condition; an extensive bibliography is appended. Abdominal Hernia, by E. Wyllys Andrews, of Chicago, gives in detail the author's method of repair of inguinal hernia but refers also to the salient points of other operations in this and other varieties of hernia. C. W. Oviatt, of Oshkosh, has been allotted the subject of Surgical Diseases and Wounds of the Intestines, and Mesentery: in an abundantly illustrated article he has dealt very satisfactorily with this important field. The volume concludes with a lengthy and excellent discussion of Surgical Diseases and Wounds of the Anus and Rectum by J. P. Tuttle, of New York, and S. T. Earle, of Baltimore. The standard, set by the preceding volumes, has been maintained in this one, the illustrations are numerous and well selected and the work is a credit both to the contributors and the publishers. W. H. W.

The Practical Medicine Series. Comprising ten volumes on the year's progress in medicine and surgery. Volume VI. General Medicine. Edited by Frank Billings, M. S., M. D., and J. H. Salisbury, A. M., M. D. Series 1910. The Year Book Publishers, Chicago, Ill.

This little volume gives a very comprehensive review of the important publications on internal medicine during the past year. The articles abstracted are well chosen, and the value of this book is increased by numerous comments by the editors, comparing their own experience with that of the writers. It can be recommended as a valuable book for every practitioner. J. P.

Dislocations and Joint-Fractures. By Frederic Jay Cotton, A. M., M. D., First Assistant Surgeon, Boston City Hospital. Octavo of 654 pages, 1201 original illustrations. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $6.00 net; half morocco, $7.50 net.

The importance of this book cannot be overestimated as a work of reference, either from the teacher's standpoint or that of the surgeon, and it should be kept in the accident rooms of hospitals where it can be obtained at a moment's notice.

As the author states "Injuries to and about joints constitute one of the most doubtful fields of surgery, a field strewn with wrecks—the products of mistakes and of unavoidable difficulties, prolific in discontent and in resultant actions at law—actions based only too often on unavoidable uncertainty or error."

One does not find here the rules concerning the treatment of certain fractures and dislocations that have been handed down from one textbook to another, but rather careful descriptions of what the author considers the best treatment. These descriptions are greatly simplified by the addition of 1201 illustrations, 830 of which are from drawings by the author.

The book is excellently written, by an extremely careful observer. All possible dislocations and joint fractures have been taken up very systematically with, first, good photographs of actual cases, an excellent description of the deformity, as well as the limitations in motion, then radiographs, and finally a clear comprehensive explanation with illustrations of what the author has found, from his own personal experience, to be the best methods of treating the different injuries. G. N. M.

The Practice of Medicine. A Guide to the Nature, Discrimination and Management of Disease. By A. O. J. Kelly, M. D., Assistant Professor of Medicine, University of Pennsylvania; Professor of Medicine, University of Vermont. Octavo, 949 pages, illustrated. Cloth, $4.75, net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

There are a number of admirable one volume textbooks of medicine, and still more comprehensive systems, so that the author who ventures to place before the profession another textbook must have a definite reason for his action. The claim which the present writer sets forth is that he is preparing a book for the student and the junior practitioner of medicine, which contains, unadorned with great detail, the essentials in the symptomatology, diagnosis, and treatment of disease. To do this requires a thorough knowledge of the subject, and accurate judgment as to what should be excluded.

The arrangement of the book is good. A pleasing feature is the addition of a short chapter on pathological physiology at the beginning of each of the sections. This contains only the main facts, but, as a rule, sufficient to give the student a broader view of disease, and of the disturbed functions which follow. The reader misses the helpful chapters on differential diagnosis which are to be found in some other textbooks. The value of the work would be increased, if the author had given here and there throughout his book references to important publications, so that if the student, becoming interested in a subject, wished to study it further, he would know where to look for further help.

The reviewer was glad to see that epidemic polionelitis was included among the infectious diseases, and that a brief reference was made to the experimental work of Flexner and Lewis. The paragraphs on treatment are concise and yet give the essentials. This is all that the student can expect to find in a single volume textbook on internal medicine. In the section on nervous diseases the author has used many of the familiar diagrams of Starr, and has followed out very much the same order in the arrangement of the subjects.

Altogether this book forms a very concise and comprehensive text on medicine, and yet the reviewer can not see where it can ever supplant the work of Dr. Osler, which for so many years has stood as a model of what a single volume publication on the practise of medicine should be.

J. P.

The Practical Medicine Series. Comprising ten volumes of the year's progress in medicine and surgery. Volume II. General Surgery. Edited by John B. Murphy, A. M., M. D., LL. D., Professor of Surgery in the Northwestern University, etc. Series 1910. The Year Book Publishers, Chicago.

This volume is one of a series of ten issued at monthly intervals and covering the entire field of medicine and surgery, each volume being complete for the year prior to its publication on the subject upon which it treats. A very satisfactory review of the previous year's surgical progress is recorded in this issue. New operations are carefully described and illustrated. New instruments and improved methods of diagnosis are thoroughly discussed. In the description of operations and technic reference is always given to the original article from which the information was taken so that one finds here a very extensive and useful bibliography. While the volume is primarily intended for the general practitioner it will be found an extremely useful one for the surgeon as well.

Medical News.

A. J. Skeel has removed his office to his residence at 1834 East 65th Street.

N. O. Stoner has opened an office in the Kingmoore Bldg., 1110 Euclid Ave.

The Lakeside Hospital Medical Society held the forty-ninth meeting on Wednesday, October 26. The program was as follows: 1. Presentation of Questionable Case of Amaurotic Family Idiocy, V. C. Rowland. 2. Presentation of Gunshot Wound of Thorax, A. Graham. 3. Presentation of Three Cases of Lues Treated with Ehrlich's "606," W. T. Corlett. 4. Presentation of a Case of Rheumatic Myositis, W. S. Wyatt. 5. Demonstration of Pathological Specimens, E. P. Edwards.

The Elyria Memorial Hospital Staff held the regular monthly meeting at the hospital Monday, October 17. Walter B. Laffer, of Cleveland, read a paper on Polyneuritis.

The Lorain County Medical Society met at Lorain, October 18. Chas. W. Moots gave an illustrated lecture on Tuberculosis.

The Surgeon General of the Army announces the first of the preliminary examinations for the appointment of first lieutenants in the Army Medical Corps for the year 1911 will be held on January 16, 1911. Full information concerning the examination can be procured upon application to the Surgeon General, U. S. Army, Washington, D. C. There are at present seventy-six vacancies in the Medical Corps of the Army.

The Sandusky County Medical Society met Thursday, October 6. John Phillips, of Cleveland, gave an address on Epidemic Poliomyelitis. It was discussed, especially as to the policy of isolation.

The Annual Meeting of the Eighth District will be held in Zanesville on Friday, November 25. Besides the papers by the members in the district several good addresses will be given by men from Chicago, New York, Cleveland and Toledo. The papers and the writers have not been definitely arranged as yet, but the following program will be carried out:

Surgical Clinic and Medical Clinic at the Good Samaritan Hospital by Julius Jacobson, of Toledo, and possibly C. F. Hoover, of Cleveland, in the morning. Luncheon given by the Sisters of the Good Samaritan Hospital. Business session and presentation of papers in the afternoon at the High School Auditorium. Dinner at 6 p. m. at St. James Episcopal Parish House, to the visiting physicians, by the Muskingum County Society, followed by presentation of papers in the evening. A cordial invitation is extended to all the physicians of the State to come and spend the day. Every effort is being made to make this the best meeting ever held in the district and it is hoped that there will be a record-breaking attendance.

The Muskingum Count Medical Society met Wednesday, October 12. The following program was presented: 1. Nephritis Complicating Pregnancy, W. F. Sealover. 2. Abortion, H. F. Lorimer. A Committee was appointed to meet the candidates for the State Legislature and discuss with them whatever legislation comes before the Legislature at the coming session.

F. S. Baron, Zanesville, returned October 10 from a three months' visit to the eye, ear, nose and throat clinics of London and Vienna. He will confine his practise to the eye, ear, nose and throat, and has removed his offices to the Peoples Savings Bank Building.

Deaths.

William B. Rouse, Painterville, Ohio, died October 18, aged 60.
James Ross Bell, Dayton, Ohio, died September 24, aged 85.
Frederick J. Bauer, Mogadore, Ohio, died October 5, aged 56.
George Marshall, Columbus, Ohio, died September 14, aged 64.
George F. Cook, Cincinnati, Ohio, died September 21, aged 64.
Frank H. Lower, Cleveland, Ohio, died September 28, aged 42.

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Psychoses Associated with Acute Infectious Diseases.

By ALBERT M. BARRETT, M. D., Professor of Psychiatry and Diseases of the Nervous System, University of Michigan.

In this paper I desire to present a clinical and pathological report on some psychoses associated with acute infectious diseases. In an ordinary asylum experience, cases of this sort are not common, and when they do occur they may often be overlooked owing to the neglect of a thorough clinical examination of the physical aspects of the case. They are always of great interest from the standpoint of differential diagnosis and the possibilities they present for study of the psychological disturbances resulting from an apparently definite etiological factor.

The rôle of the acute infectious diseases as a cause of insanity is probably of greater importance than we have means of determining at the present time. Our knowledge of what somatic diseases are due to toxic and infectious conditions is continually increasing as we have at hand greater improvements in diagnostic methods and technical skill.

As psychoses due to acute infectious diseases, we include those acute or subacute mental disturbances which occur at the beginning or during the course of an acute infectious somatic disease. The relation of infectious diseases as causative factors of the more chronic types of insanity, such as dementia praecox and some other forms, is too unclear for consideration at the present time. The general occurrence of acute infectious diseases among children and young adults makes it especially difficult to judge of the importance of these condtiions for the later de-

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Read before the Experimental Medicine Section of the Academy of Medicine of Cleveland, October 14, 1910.

velopment of a chronic psychosis. There is such considerable statistical data of the frequency of typhoid fever in those who later on develop dementia praecox as to call attention to its importance as a factor in the production of this disease. Kraepelin obtained a history of acute infectious diseases in 10 to 11% of his cases of dementia praecox.

The knowledge we possess of the importance of the acute infectious diseases for the production of organic nervous diseases and the many clinical, anatomical and experimental investigations of structural alterations among the cortical nervous elements in acute infections further emphasizes the importance of these conditions as factors in the production of mental disturbances. The etiological relations of the chronic infections, such as syphilis, tuberculosis and sleeping sickness, are more frequently observed and are better known than the acute.

The question as to whether the mental disturbances met with in acute infectious conditions are to be classed as simple deliria or whether these attain the importance of psychoses is an unimportant distinction and one largely due to the difference in length of duration, and the circumstances that they are commonly treated by the general practitioner or internist and rarely come into the hospitals for the insane or special care of the psychiatrist. The fact of the common association of fever with infectious states raises the difficult point as to whether the condition is one due to the temperature or to the absorption of toxins. This is a point apparently incapable of solution at present from the anatomical findings. It is experimentally possible to produce apparently the same types of alteration among nerve cells by simply increasing the body temperature; as are met with in anatomical studies of the nerve elements in conditions of acute infections with and without temperature. In one of the cases reported in this paper, that of a severe delirious excitement occurring in puerperal infection of the uterus, the clinical observations show that there was no rise in temperature, but the histological findings are of the type experimentally produced by increasing the body temperature.

The frequency of acute infectious diseases as a cause of mental disease of course depends upon whether or not every transitory delirious state is to be included in this connection. The acuteness of these conditions, or their development in a subject already under a medical care which does not call for their admission to a psychiatric hospital, makes it difficult to give any accurate statistics. Kraepelin noted their occurrence in 1 to 2% of the admissions to his hospital. Müller found that 2% of all insanity originated from acute infectious diseases.

One finds in the casuistics on this subject reports of psychoses associated with almost every one of the acute infectious diseases. The greater number occur in typhoid fever. As less frequently met with Siemerling mentions the occurrence of mental disturbances in acute articular rheumatism, influenza, pneumonia, pleurisy, malaria, small pox, measles, scarlet fever, diphtheria, erysipelas, pulmonary tuberculosis, parotitis, cholera, dysentery, leprosy, hydrophobia, gonorrhea, ergotism and pellagra.

The cases I desire to report are of five patients who had been studied clinically either in the State Asylums for the Insane, or at the State Psychopathic Hospital. The anatomical studies were made in the laboratory of the latter institution. The infectious diseases were malignant endocarditis, typhoid fever, puerperal sepsis and peritonitis.

Case 1. Malignant endocarditis.

The patient, R. P., was a woman 27 years old when she entered the State Psychopathic Hospital on January 28, 1909. Among her antecedents there was a history of her father becoming insane when he was 46 and dying two years later. There was nothing of importance in her personal history until she was 21 when she had some dysmenorrhea and lost much in weight. A year following her marriage at 21 she had a miscarriage and was a patient in a general hospital, where she was curetted and after a week discharged as cured. At 24 she had another miscarriage and was again sent to a hospital where a diagnosis of endometritis was made. After curettage she was discharged. A few weeks later she returned to the hospital and after another curettage was discharged. From this time on her physical health was poor and she complained much of a general weakness. About the middle of December, 1908, she was seen by a physician on account of pain in her stomach and right ovarian region. She spoke of a general weakness and of periods when she "did not know anything and lost herself." She complained of rheumatic pains in the right arm and leg. On one occasion she showed a peculiar memory disturbance when, following the bandaging of her arm, she later declared she had no memory of its having been done. At another time she started to bring something from the kitchen and not returning she was sought by her friends who found her leaning against a door in a dazed condition and inattentive to what was going on about her. Some slight disturbance of speech was noticed but this was absent on the next day. From this time on she continued to be mentally peculiar. She expressed vague ideas of having been poisoned, and developed an intense dislike for her own husband, declaring that she was not his wife but the wife of Dr. A., who was her attending physician. She had a rise in temperature to 107°, and on January 18, 1909, was taken to a general hospital. There she was quiet, but was not clear in her mind. She understood questions but had difficulty in answering any that required any continued thought. For recent events her memory was not clear and she expressed the same delusions as before, viz.—calling herself the wife of Dr. A. and believing her food had been poisoned. That night she slept poorly and was restless. She acted as if she had auditory and visual hallucinations and spoke of seeing her husband following her and of being buried.

On January 28 she was admitted to the State Psychopathic Hospital. She was so weak that she was carried to her room. Her facial expression was smiling and she often laughed lightly without any apparent cause. Sometimes her conversation was interrupted by boisterous outbursts of laughter. She comprehended questions, but her attention was not easily held and her thought frequently wandered. Her orientation was defective, she knew she was in some kind of an institution, but could not tell the city or give the date. She called the physician by an incorrect name. There was a certain quality of playfulness in her conversation. When asked how she was, she replied, "How am I? I'm not very well, I'm in love," at this she laughed lightly. She declared that she was in love with Dr. A. and that he was her husband. When she was asked her own name she gave her maiden name, but insisted that Dr. A. was her husband. She apparently was aware of inconsistencies in her expressions, and complained of feeling tired, and unable to remember.

On the day following her admission she gave her name as Mrs. Dr. A. She was disoriented, not being able to give the day of the week and when asked what month this was, she looked out of the window and remarked that "as it looked cold it must be winter." The city she called "Ypsilanti."

In her reaction to questions for simple information she often laughed lightly. Her attention was easily distracted and it was difficult to keep it fixed on the question. As the examination proceeded this distractibility became more marked. After short rests it could be held better. Noises near her sometimes started a new direction of her thought, as when she heard a bell ring, she remarked, "Down goes the curtain, this is the last act." When asked to count to 50 she started, "a, b, c, d," and then counted from to 1 to 20. She then asked, "What is the use of all this nonsense, when I have my sister Lily and Violet here? Do you think I am freezing to death, Lily? I am too tired to think." Answers to simple mental calculations were correct but she was unable to do those that required any concentration. She would not make the attempt to answer and excused herself by saying that it was too much for her to remember.

While any reaction to hallucinations was not observed here, she told, in response to direct enquiries as to whether she had heard voices or seen peculiar objects, that she heard voices constantly, voices of her sister, mother and husband and that they seemed to be crying all the time. She related that she had seen visions of fingers or pieces of furniture coming up toward her eyes.

She had difficulty in giving any connected account of her early life; this was evidently because of her inability to hold herself to any continued line of thought. There were some falsifications of memories for recent impressions. This was noted in her insistence on her marriage to Dr. A. and in her statements of having been poisoned and buried two or three times. Her account of her husband's ill treatment was untrue. When tested for retention of memories of numbers and paired word associations, she gave only one correct recall among ten. Here also the element of distractibility of her attention could account for the errors. Sometimes she would interject phrases bearing on her delusions as, after she had been asked to recall a certain number she had been told, voluntarily remarked, "I know where Dr. A. lives if that is what you want."

Distractibility of thought and superficial associations were noticed in these word recall tests. Her reaction to the paired associations, "Face-beard" was "Face, race." To the words, "Bridge-river," "Bridge—what you go across, I've crossed lots of times." To the suggested word "white," she answered, "Night, right." (Green?) "I'm green, I guess, all right." (Firm?) "Worm, germ." (Pointed?) "All fingers point suspicions at me." Her average reaction time in a series of association tests was lengthened to 4.7".

She had a number of delusions, which were not clear to herself and were not well elaborated. The predominant one of these was, that she was married to her attending physician, Dr. A. How this could be she did not know but she insisted that it was so. She would not attempt to explain this idea, usually complaining of being too tired to think. In harmony with the delusion she told of being the object of persecution by her husband and mother and that they had buried her two or three times. This last idea may have its explanation in her several hospital experiences which she at other times spoke of as occurring because her husband wished to be rid of her. Her present sickness she declares is the result of her being in love with Dr. A. and she voluntarily remarked that she is "bughouse and had been so for some time."

Her mood was predominantly one of light spirited indifference. There was no deep or consistent sad affect to her ideas of being neglected or poisoned, nor did she show any deep concern for her ill health. Usually she spoke of these ideas with smiles and light laughter. On many occasions, usually following a prolonged conversation, she became irritable and during her further hospital residence there were a few episodes of impulsive resistance or assault.

A physical examination made soon after her admission showed her to be a small woman with an appearance as of one sick. There were dark rings around the eyes and her tongue was dry. The only abnormalities found among the internal organs concerned the heart. The first sound was a loud blowing systolic murmur, transmitted into the axilla. The urine had a specific gravity of 1009, there was present a small trace of albumin, and in the sediment a number of hyaline casts and some red blood cells. The examination of the blood made a few days later showed a leukocytosis of 11,360 and 3,900,000 red cells. The hemoglobin test was 70-80%. The blood pressure was, systolic 85, diastolic 65. Neurologically there were subjective complaints of weakness and there was a very marked fatigue increasing during the examination. Cooperation in some of the tests was not good on account of her distractibility. Her gait was slow and like that of one who is weak. The tongue and fingers showed fine tremors. Eye and facial movements unimpaired. The right pupil was a little larger than the left. Light and accommodation reflexes were undisturbed. Ophthalmoscopic examination showed engorged and tortuous veins, slight reddening of the discs and a high connective tissue veiling, extending from the vessels near the disc. The tendon reflexes were all somewhat increased. Corneal and pharyngeal reflexes present.

On February 12 she conversed in a drowsy manner, often closing her eyes and complaining of being tired. She still showed the same delusions and when asked how this could be true she replied, "I don't know, I'm so tired, everybody leaves me and I get scared,—all but Mrs. S. (a patient in a bed near her). I don't know her name. Do you want me to spell my name? I couldn't spell my name—my name is Rose. I don't know, I'm tired out, that is all I know. I'm just tired and sleepy." She had on several occasions acted as if afraid and when asked why this was so, she replied, "Why, I'm afraid of everyone that goes away and leaves me and makes a lot of noise, but they don't leave me and—oh, I'm just tired." Her disorientation was not complete. She knew she was in a hospital where there were nervous people and she spoke of the physicians as belonging in the office. She was suspicious of her food, saying that sometimes it tasted right and sometimes not.

On February 22 there was an episode of irritability in which she struck her nurse and refused her medicine and food. This quickly passed away and she continued in her usually drowsy but agreeable manner. She complained that people talked badly about her. Although she had seen no visitors recently she now spoke of her brother and another man as having been with her yesterday and that they left her some flowers.

After the first few days in February her sleep became poor. Although she received 10 grains of veronal nightly, she rarely slept more than five hours. For five consecutive days in this month she did not average more than one hour. She ate poorly but her weight gradually rose from 75 to 80 pounds in the first two months.

On March 25 she was unclear in her orientation. She spoke of the hospital as being Mr. Swift's residence; the city must be Northville, but as she saw the adjacent hospital buildings she remarked that "she did not know about those school buildings." Although she had often been told the names of her physicians she could not give them. She had some appreciation of having been ill but insisted that there was nothing now wrong with her mind although in the past she must have been out of her head. Things were not now always clear to her, but they were more so than formerly. She still insisted that she was Mrs. Dr. A., but when asked when she was married she replied, "That is where I get mixed up, but I was married." All efforts to have her explain this are met with evasions and statements that she had not been treated properly by her relatives and that others were jealous of her. There was no attempt to elaborate these into any clear explanatory idea.

March 23.—For the past three weeks there had been a greater degree of clearness. She became fatigued less easily in continuous thinking. Occasionally she gave her identity correctly. Sometimes things were clear to her and at others not. In response to questions she insisted that she was Mrs. Dr. A., but voluntarily remarked, "It still comes to me that I am, but it is getting farther away." This uncertainty as to her identity was evident in her statements in which she said she was both Mrs. P. and Mrs. Dr. A. She was not clear in her orientation and gave her answers with a careless unconcern. She stated that she came here in January, that she had been here six months and that this was the month of June. When her attention was called to the snow out of doors she offered no explanation. Recently she broke a glass jar over the bath tub and remarked that she was christening her own death.

During the first month in the hospital, on one occasion only her temperature was above normal. On April 2 she complained of pain in the left hip and her temperature rose to 101.6°. From then on she had an irregular febrile temperature, low in the morning and high in the evening. The highest point reached was 103°, but generally it did not go above 101°. The pulse rate varied between 90-112, and the respiration from 20-28 per minute. Episodes of irritability became more frequent and there was an increasing emotional indifference to the visits of her friends. She was more inactive and could not easily be drawn into conversation. The unclearness, orientation, distractibility of attention and rapid fatiguing were still present. She rarely spoke of her former delusions.

By April 15 her physical condition had become so serious that she was transferred to the internal medicine service where she remained until July 1.

The history of repeated abortions suggested some pelvic condition as being responsible for her evident septic condition but the examination in the gynecological service, with and without anesthesia, showed nothing more than a slight backward displacement of the uterus. A summary of the observations in the department of internal medicine showed the recognition, on February 9, of a cardiac mitral lesion which at that time did not seem serious enough to explain her mental disturbance.

On April 9 the first sound at the apex was short, and was followed by a loud blowing murmur, poorly transmitted to the axilla. This was best heard in the third interspace at the right of the sternum. The radial pulse was rapid, quick and of low tension.

On April 16 the apex beat was in the fourth and fifth interspace, 7½ cm. to the left of the median line. There was no thrill. The second pulmonic was palpable. The right border of the heart was 1 cm. to the right of the sternum, the left border to apex. At the apex there was a loud rather blowing systolic murmur transmitted to the back and axilla, faintly heard in the right back and axilla. The second sound was well heard at the apex and was followed by an indefinite third sound. The second pulmonic was accentuated and accompanied by a faint musical murmur at times.

At the aortic area there was a soft systolic blow. Palpation of the abdomen gave a suggestion of a mass deep down in the upper right abdomen. The ureters were catheterized on several occasions in the surgical service. From both kidneys were obtained pus, and hyaline and granular casts.

There was a characteristic septic febrile temperature present at all times during her stay in the medical service, excepting for a period of about nine days, when the temperature ranged up and down below normal. The highest temperature reached was 102.6°.

Repeated blood examination usually showed a leukocytosis of 11,000 to 16,000. The urine always contained albumin and casts.

On June 16 the heart murmurs were the same except that the diastolic murmur was more distinct. The spleen was palpable about 2 cm. below the costal margin on inspiration.

On July 1 she was returned to the Psychopathic Hospital, the diagnosis of malignant endocarditis having been determined. There was noticed an increasing apathy. She rarely took any interest in anything and answered questions concerning her health in an indifferent way. Edema of the legs and face developed. Occasionally there were attacks of vomiting. On two occasions her temperature rose to 106°. Death occurred on July 22, 1909.

The important points in the foregoing description are the occurrence in a young woman, with a family history of insanity, of malignant endocarditis, probably having its origin in an endometritis following a miscarriage. This disease ran a course of about seven months and was accompanied by subacute nephritis.

During the first two months there was no febrile condition, but after that an irregular temperature of septic type continued.

For the last seven months there was present a peculiar type of mental disturbance. This began suddenly and was characterized by unclearness of perception; transitory hallucinations; distractibility of attention; distractibility of thought; difficulty in thinking; becoming confused on continued effort; extreme exhaustion of intellectual ability on fatigue; delusions of reference, suspicion and unclear identity, which were not elaborated; partial disorientation; falsification of memories; the mood showed a light spirited indifference. The mental disturbance varied but little during its further course until near the end when there developed an increasing dulness and apathy. The whole psychosis was of the type of a prolonged mild delirium.

Pathological diagnosis:—Subacute vegetative endocarditis of the mitral valve; embolic infarction of spleen and kidneys; thrombi of abdominal, renal, iliac and femoral arteries; edema of lower extremities; saccular aneurism of meningeal artery; hypertrophy and dilation of heart; brown induration of lungs; chronic passive congestion of all organs; fatty degeneration of liver; early arteriosclerosis of aorta.

Histological examination of the cortex shows very interesting changes. These were found in all regions examined. These changes most concern the neuroglia.

While the majority of the nerve cells do not appear altered, there are scattered forms in which the chromatic substance is lessened. Such cells are pale and in places seem to be disintegrating. Very interesting features are obtained by methods for demonstrating fat. While fat pigments are present commonly in the nerve cells, only in senile cases are they as great in amount as in this case. Some cells are crowded full of coarse fat pigments.

The chief changes are present in the intercellular elements. The neuroglia cells are commonly swollen. Often they lie in clusters of two to four and are surrounded by a mass of poorly differentiated protoplasm. In most of the neuroglia cells there are excessive amounts of fat pigments. Apart from these there are scattered abnormal types of cells such as one meets with in inflammatory reactions in the cortex. Some of these are evidently vessel-forming cells.

The changes as a whole are not acute but rather representative of a slowly coursing process.

Case 2. Typhoid fever occurring in two attacks; the first of 21 days with delirious episodes; the second a reexacerbation with high temperature and gall bladder involvement, continuing for four weeks. During this there was delirium, stupor and neurological disturbances which persisted through a nonfebrile period and continued until death.

E. C., age 23, a young woman with negative family history; married and has had two healthy children. In November 1906, she became ill with typhoid fever. The attack was mild but on several occasions she was delirious, not knowing those around her, and was moderately excited. After 21 days her temperature became normal. She did well for seven days, when, following an indiscretion of diet, the fever returned and she was more severely sick than in the previous attack. Her temperature was high and continued for 10 days; on some occasions it reached 105.5°. There was marked abdominal tenderness in the right hypochondrium. She was jaundiced and vomited much. During this attack which continued for four weeks she was delirious and sleepless. There developed strabismus, paralysis of the external recti and choreiform movements of the hands. After four weeks the temperature became normal but the mental and the neurological disturbances continued and flexor contractures developed in the legs. While in the beginning of the disease she talked much and loudly, she now could barely speak above a whisper.

She came into the State Psychopathic Hospital on March 14, 1907. She was so weak as to be incapable of helping herself. Her temperature was 99.8° and she had a pulse rate of 137. Her skin was a yellow brown color with some infected abrasions on the hands. A very severe pharyngitis allowed her to speak only in whispers and made it difficult for her to take even liquid nourishment. As she lay in bed her legs were flexed and could not be passively extended. Her arms and eyes were frequently moved in a choreiform way. Mentally she was dull and from her questions she was apparently unclear as to where she was.

The first night she slept four hours with a hypnotic. The next day the movement of the hands and eyes continued. The pupils were equal, a little irregular in outline and the light reactions were not abnormal. Patellar and Achilles tendon reflexes absent. No Babinski. Mentally she was dull and she had extreme difficulty in enunciation. A blood examination demonstrated a leukocytosis of 12,000. Lumbar puncture showed normal pressure and no lymphocytosis. The urine contained albumin and gave the diazo reaction. During the next few days she continued stuporous. Her attention could only be gained by strong stimuli and then could not be held. Often there was twitching of the facial muscles.

On March 20 pressure sores developed on the buttocks. Her temperature never reached normal, and varied between 99° and 100.4°. It gradually rose in the morning, reaching the highest point in the early afternoon and then slowly declining to its low point in the early morning.

On March 21 she was a little brighter, comprehended simple questions and gave correct answers. She easily became fatigued and then her speech could not be understood.

On the two following days she was more stuporous. Her mouth twitched and at times there was a coarse tremor of the whole body. The movements of the arms were as before.

On March 25 she was somewhat apprehensive. She spoke of her feet being on the floor and told the nurse to move as she was stepping on them.

On March 28 her temperature rose to 103° and shortly afterwards she died.

The pathological diagnosis made at the autopsy held a few hours after death was:—Subacute or chronic typhoid infection; intestinal ulceration; chronic cholecystitis and cholelithiasis; congestion and hemosiderosis of spleen; bronchopneumonia; atrophy and parenchymatous degeneration of all organs; general marasmus. The brain weighed 1,400 grams. Its consistency was soft and flabby. The pia was clear and delicate, and its vessels showed slight congestion. The blood vessels elsewhere were not abnormal. There were no focal lesions.

The pathological changes in the central nervous system may be summarized as a severe, generally distributed degeneration of the nerve cells of the general type of acute swelling, with absence of proliferation of the interstitial elements. The spinal cord showed posterior column degeneration.

Histological study of the cortex showed very marked changes among the nerve cells. All regions examined showed these in varying degree. In the frontal region the sections showed patches in which nerve cells were fewer in number and in various stages of severe alteration. The general type of the alteration is that of the acute swelling. The change is best seen among the large pyramids. These cells are swollen; the inside of the cell, instead of containing lumps of chromatic substances, is filled by a close meshed, pale reticulum, which obscures the outlines of the nucleus. The processes are crumbly and traceable far from the cell. Other cells, probably later stages of this type of change, have a body broken away in places. The nucleus is swollen and of irregular outline. Around the more severely altered cells are clustered satellite cells in small numbers. In other regions these same types of alteration are present together with cells showing a variety of abnormal pictures and all very severely degenerated. A few show fine incrustations usually near the base. In many places nerve cells have disintegrated nearly to complete disappearance. The neuroglia shows in a few places some evidence of progressive change.

The blood vessels nowhere show changes.

There is no alteration of the pia mater.

The spinal cord shows a slight posterior column degeneration, not unlike the tabetic type. In the lumbar region it has the character of a root degeneration. In higher levels it extends toward the median septum. The lateral columns are intact.

Case 3. Typhoid fever, initial delirium: Mild mental disturbance after two weeks, passing into a hallucinatory, apprehensive delirium, with unclear consciousness, disorientation and fatigue on mental effort, severe neurological disturbances, contractures, tremors and increased reflexes, these symptoms being present in an afebrile state and continuing until death. In last 12 days objective symptoms of typhoid fever.

J. H., age 35, a woman always physically delicate. For the past year a gradual decline in health. On November 1, 1906, she cried and laughed much and complained of bad dreams. She continued in this way for 15 days when more severe mental symptoms developed. She spoke of herself as "the devil" and called her nurse "the savior." She could see the spirits of her dead babe and her parents. On January 20, 1907, she came into the Michigan Asylum at Kalamazoo.

Her general physical condition was poor; her face pale and cyanotic. The skin was dry and in many places showed healing abrasions; mucous membranes dry and cracked. The abdomen was distended, tympanitic and tender when pressed; bowels loose. The urine was negative except for a high specific gravity. Her temperature was 98.8°, pulse 85, and respirations 18. She was too weak to walk. Muscular movements were accompanied by coarse tremor. When she walked with support her movements showed ataxia and incoordination. All tendon reflexes were exaggerated and clonic movements were easily produced.

Mentally she had difficulty in comprehension. The first few questions in any line of thought were grasped, but after prolonged efforts there was an increasing difficulty of comprehension. She was disoriented; she gave the year as 1901; the day she did not know. Usually she would repeat the question several times before answering. She could not give the name of the city and said she had been here two weeks. In her reaction to questions for simple information her replies were at first correct, but she soon became unable to give what was wished or made mistakes. An attempt to write her name induced such a tremor that she could not proceed.

There were evidences of hallucinations, as when asked if she heard voices, she replied, "Yes, I hear them getting married out there." As she started on any line of thought her associations were not at first peculiar, but after a short time she became confused, her thought wandered and her replies were irrelevant. The suggested word "black" made her think of being burned; the word "red," "Of blood, that's all. Oh, red's blood, our Savior loved me so." At times she was apprehensive, asking if she was to be burned or if she was to be killed. At other times she appeared ecstatic, and smilingly talked of angels, Christ and heaven.

On January 28 there were contractures of the left side of the neck so that the patient could not hold her head upright.

Until January 30 her temperature was normal. On this date it rose to 99°. She had on this day some slight seizure. There was extreme tenderness over the entire body, even the weight of the bed clothes caused her pain. There were painful contractions of the adductor muscles of the right thigh.

On January 31 her temperature reached 101.4°. Any muscular action caused great tremor. The tongue was dry and the teeth covered with sordes.

On February 1 her temperature rose to 104°.

On February 2 she died, her temperature shortly before reaching 107°.

An autopsy was held a few hours after death. The pathological diagnosis was acute hyperemia of liver and spleen; lymphadenitis; swelling of Peyer's patches. The brain weighed 1,293 grams. The blood vessels and membranes were not abnormal.

Histological study of the cortex shows very severe alterations of the nerve cells in all regions examined. The type of these changes differs in various regions, but all cells in any section are affected to a greater or less degree. The changes in the cells give an unusual appearance to the cortex under low magnification.

In cells least altered the body is shrunken, the outline of the base is angular and the sides bulge a little. No distinct tigroid substance is present. The interior of the cell is filled with a close meshed network densest about the nucleus, whose margin it obscures. The nucleus is of a homogeneous deep blue appearance, with a deeply stained nucleolus. In what is apperently a later stage and a more severe degree of injury, the cell is swollen, its outline rounded and the body contains pale granules closely aggregated at the base. The nucleus is large, its outline irregular and inside it contains fine dust-like granules. The most severe alterations are seen where a pale nucleus, with irregular and shrunken outline, lies surrounded by pale fragments of a disintegrated cell body.

In sections from the motor regions some of the largest pyramids show the changes of the axonal reaction, but these are not typical as the cell is more severely altered than is common in this change. In some sections the glia cells were swollen and occasionally mitoses were observed.

The pia mater shows no inflammatory changes.

The spinal cord is unchanged.

Case 4. General tuberculosis: Insane heredity; neuropathic constitution; indefinite pecularities of character for two years preceding an acute psychosis, which developed after childbirth. This disturbance was an apprehensive agitation, with extreme resistiveness which continued until her death six months after onset.

L. B., a woman aged 33 at her admission to the Michigan Asylum at Kalamazoo on May 6, 1906. Her family had several members who were insane. She herself was a nervous child and could not be kept in school. She was married and had three children. Following the first two labors she was confused and drowsy for a short time. There are indefinite statements that since she was 31 she has been eccentric and peculiar in her conduct. Four days after the birth of her last child she became excited and talked as if she were confused. For two weeks she continued to show an apprehensive agitation. Then, after a short period of improvement she became depressed, accused herself of misdeeds and talked of suicide.

On May 6, 1906, she came into the Michigan Asylum at Kalamazoo. Physically she was emaciated and appeared to be severely sick. On account of her extreme agitation a satisfactory physical examination was not possible. She was extremely restless, walking about in a state of agitation. At night she slept poorly and took nourishment only by forcing. She would not speak and resisted strongly against whatever was done for her. Whenever the nurses came near her she struggled to get their keys. Usually she would not keep her clothing on; she had no care for her personal needs and at all times seemed to be in extreme terror.

This condition continued until June when she had become so weak as to be kept in bed. At this time a superficial physical examination demonstrated extensive tuberculous involvement of the lungs.

About June 11 she developed a severe diarrhea and died June 13, 1907, from peritonitis, occurring in a general tuberculosis.

The pathological diagnosis was:—Pulmonary tuberculosis; lymphadenitis; perisplenitis; acute peritonitis; tuberculosis of intestines; intestinal intussusception.

The brain weighed 1,126 grams. The vessels of the pia mater were much congested. Otherwise there were no gross abnormalities.

The incompleteness of the foregoing history may raise the question of the correctness of the diagnosis of an infectious psychosis. The patient had at her admission to the asylum been regarded as a case of dementia praecox. When the case is reviewed in the knowledge of its later course and the anatomical findings, there seems to be much to support the diagnosis of an infectious condition. The course was not typical for dementia praecox and the pathological process present in the brain is characteristic of an acute disease and in no way that of dementia praecox.

Histological study of the cortex shows the presence of severe degenerative changes in the nerve cells of all regions examined, but of varying degrees of intensity of involvement. There are a number of types of alterations. Those least affected are shrunken, have no tigroid substance, but the interior is filled with a fine reticulum. The processes are deeply stained and traceable far from the cell. The nucleus is oval and often shrunken away from the other cell structures. Occasionally nuclei contain from one to three dark bodies besides the nucleolus. Many cells have peculiar masses lying on or near them; these are what Nissl speaks of as incrustations.

There are commonly seen fragments of nerve cells which have disintegrated until all that is left is a round or oval dark nucleus surrounded by pale residuals of the cell body.

There are no proliferative changes in the blood vessels or neuroglia.

Case 5. Puerperal sepsis: Previous attack of excitement with delirious features. Five years later following childbirth and septic endometritis she rapidly developed an apprehensive delirium without fever. Death 12 days after onset.

M. S., a woman who at 24 became acutely insane and was a patient at the Northern Michigan Asylum. The condition during the first few days was described as resembling "delirium grave." She then became quieter but relapsed and for about 10 weeks was in a "maniacal attack." After this she improved and was discharged four months after her admission. At that time she was described as being in a comfortable condition. She later married and when she was 29 she gave birth to a child and four days later became mentally disturbed. She was noisy, sang and shouted day and night. For eight days she was excited and apprehensive. She thought the devil was after her, and was evidently hallucinated,—"brushing imaginary objects from her hands." She did not sleep and on November 12 was admitted to the Northern Asylum.

She was then greatly excited, shouting and blindly resisting what was done for her. She was unclear in her comprehension, disoriented and acted as if she were hallucinated. There was no rise in temperature. On several occasions she had light spasms; in these attacks she became pale, the eyes were rolled about and the mouth drawn to one side. There persisted after these an internal strabismus. The uterus was large and the cervix and perineum torn. The urine contained albumin and casts. Her temperature became subnormal and death occurred three days after her admission.

An autopsy was held a few hours later.

Pathological diagnosis: Hyperemia of dura mater; fatty degeneration of liver; chronic and acute interstitial nephritis; incomplete involution of uterus; septic endometritis.

The nerve cells of the cortex in all regions examined show pathological alterations. These are of the type of acute swelling. The cells are swollen, their processes and axis cylinder visible for an unusual distance from the cell. All tigroid substance has disappeared and the cells are filled with a fine pale reticulum. The nucleus is large and pale. This change is to be found in all cells, the different appearance depending upon the size of the cell and the degree of the alteration. Nowhere does it seem to have gone on to cell disintegration.

The neuroglia and blood vessels show no notable changes.

There is no meningitis.

The five foregoing cases give some idea of the multiformity of the clinical symptomatology which may occur in the psychoses caused by infectious diseases. Common to the cases given only is the disturbance of the consciousness.

A review of a large number of cases reported as psychoses of acute infectious diseases shows that there are no specific clinical symptoms which distinguish this group of psychoses from non-infectious conditions. The most that can be said is that it is true in general that at the same stage of an infectious disease, psychoses of the same type are prone to occur.

The clinical picture is greatly influenced by the intensity of the infection. The more acute the infectious disease courses, the more turbulent are the psychical symptoms. This is borne out in the cases given above. The only case in which definite delusions were present ran a subacute course of seven months. While the case in which there was the greatest excitement and most severe disturbance of consciousness is the puerperal infectious case which ran its course in 12 days.

There is a certain harmony in this series of cases between the clinical course and the pathological findings. The case which ran the longest and mildest course showed in the brain the less acute changes. One did not find in this case the same severe distinctive process affecting the nerve cells as in the other cases. The most severe changes in the cortex were found in that of delirium in tuberculosis.

The two cases of typhoid psychoses are specially interesting from the similarity of the neurological disturbances in each, and one of these, Case 4, by reason of the occurrence of the mental disturbance nearly 10 weeks before the physical signs of the disease were observed. Case 5, if it was accurately observed, has a point of interest in the occurrence of an infectious psychosis without fever, yet with the anatomical alterations which can be experimentally produced by increasing the body temperature.

The Trend of Modern Research on the Nature of Ferment Action.

By J. J. R. MACLEOD, M. B., Professor of Physiology, Western Reserve University, Cleveland.

One of the most striking developments of modern research in biochemistry concerns the nature of ferment action. So remarkable are many of the facts that have been brought to light that it cannot fail but be of interest to everyone engaged in the study of life phenomena—whatever the nature of that study may be—to know something of the main questions which are at present occupying the attention of investigators in this field. In the following article a brief survey will be given of some of these questions: no attempt will be made at completeness and only, where necessary for example's sake, will reference be made to individual ferment processes.

The discovery by Buchner that a ferment can be expressed from yeast cells which is capable of instantly bringing about the alcoholic fermentation of dextrose solutions has been responsible for a great deal of the modern advance. Formerly, yeast cells were believed to bring about alcoholic fermentation as a result of their growth: it was believed to be a life phenomenon, or "vital process." Now we know that yeast cells produce an intracellular ferment or endo-enzyme* to which its sucroclastic properties are due and which can act apart from the cells that produce it. It is no great stretch of imagination to think of all chemical reactions mediated by cellular activity as due to a similar mechanism and this further has led to the hypothesis that all processes of intermediary metabolism in the animal and plant are due to ferment action. Before Buchner's day we knew only of the extracellular ferments (such for example as the digestive ferments), that is to say, of ferments, produced indeed by cells, but secreted from them and acting outside their protoplasm: now we must recognize intracellular ferments acting where they are produced, that is in the protoplasm of the cell. But we must not permit this conception to carry us too far. We must not without further investigation imagine that the riddle of life is thus laid bare.

As an example of the rôle which extra- and intracellular ferments are supposed to play in the animal economy may be cited the metabolism of protein. Proteolytic ferments are very widely distributed in the active tissues of the animal and plant. By their agency in animal life, the complex protein molecule is prepared—split up—to render it absorbable from the intestine and, by reversed action, the tissue ferments appropriate from the blood those of the degradation products of protein that they require for the construction of protoplasm, which later they decompose so as to utilize the energy which the organism demands.

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*The terms ferment and enzyme are synonymous.

In order to break up the protein molecule in the laboratory we must employ the strongest of physical and chemical forces. We must use heat or strong mineral acids and alkalies or some other powerful agency in order to produce many of the changes which in the body are apparently so easily effected in the absence of these forces. At the temperature of the animal body and in a comparatively feeble alkaline or acid reaction the most thorough processes of analysis and synthesis occur, and the reagents which bring these about are the ferments.

It has been the custom to regard ferments as catalysts. A catalyst is a substance which accelerates (or retards) a chemical reaction which in its absence, however, could proceed at a different (usually slower) pace. The action of catalysts has been aptly likened to that of a lubricant. A weight placed at the top of an inclined plane, so held that the weight only slowly slips down, has its velocity greatly increased if its under surface be oiled. The oil accelerates the action, but it does not affect the ultimate result. Catalysts do not combine with the final products of the reaction, these being, as a rule, the same as they would have been had no catalyst been added. Another characteristic is the tremendous amount of chemical change which even a trace of catalyst can induce. There are many examples of catalysts in the inorganic world, such for example as spongy platinum which acts catalytically on hydrogen peroxide. This substance normally tends to decompose into water and oxygen, but if a small amount of spongy platinum be added to it, the decomposition is tremendously accelerated. $H_2O_2 = H_2O + O$

A very good example of the action of an inorganic catalyst is that of the hydrogen ion on cane sugar, or other disaccharides, in the presence of water. It accelerates the hydrolysis. Cane sugar solution at room temperature does not indeed, in sterile solution, undergo any appreciable hydrolysis, but at 100° C. it does, which leads us to believe that, though inappreciable, the action also occurs at room temperature. By adding a little hydrochloric acid, or other acid not having an oxidising effect on sugar, we greatly accelerate the hydrolysis because of the hydrogen ions present in the acid solution. Within certain limits the rate of hydrolysis is proportional to the amount of catalyst present.

Experiment I. To show that the accelerating effect of acid on the hydrolysis of cane sugar is proportional to the amount of acid present.

Prepare an approximately 5% solution of cane sugar and place 5 c.c. of it in each of three test tubes labelled A, B, and C.

To A add 1 drop of $N/_2$ H_2SO_4
To B add 5 drops of $N/_2$ H_2SO_4
To C add 10 drops of $N/_2$ H_2SO_4

Place the test tubes in a water bath at 38° C. for half an hour. Then remove them and cool as quickly as possible under the cold water tap. Neutralize the acid in B and C by adding amounts of $N/_2$ NaOH equal to that of the acid originally employed. Make the total volume in the three test tubes approximately equal, (i. e., add 1 c.c. of water to A and 0.5 c.c. to B). To each now add 4 c.c. Fehling's solution and heat just to the boiling point. By comparing the amount of red precipitate which forms, a striking difference in the extent of reduction in the three tubes will be seen. This is also very evident if the tubes be allowed to stand for some minutes, and the intensity of blue of the supernatant fluid be then compared.

Ferments, like catalysts, produce their action when present in very small amounts (e. g., sucrase can hydrolyse 200,000 times its weight of cane sugar, diastase can convert starch to sugar in a dilution of 1-1,000,000) and there is a distinct relationship within certain limits between the amount of enzyme present and the rate of the reaction. The final product of the reaction is, however, the same whatever rate it proceeds at; the ferment does not appear in the final product.

Experiment II. To show that the accelerating effect of sucrase on the hydrolysis of cane sugar is likewise proportional to the amount of sucrase present.

Prepare an invertase solution by mixing commercial yeast (10 grams) with 10 times (100 c.c.) its volume of water and placing the resulting solution in the incubator at 38° C. over night. The sucrase which is present in the yeast, goes into solution in the water, so that by filtering, a strong sucrase solution can be obtained. With this solution repeat the above experiment, using for A one drop of the solution, for B five drops and for C ten drops. After 30 minutes add H_2O to get the same volume in A and B as in C.

Experiment III. To show that the accelerating effect of lipase on the hydrolysis of milk fat is proportional to the amount of lipase present.

For this and the succeeding experiment prepare about 100 c.c. of a mixture of equal parts of milk and cream. To this add a drop or two of phenolphthalein solution and then $N/_{20}$ NaOH until a permanent pink colour is obtained (i. e., faint alkalinity).

Place 2 c.c. of the prepared milk in each of four test tubes labelled A, B, C, and D. Add also one drop of phenolphthalein solution to each and then:—

to A add 1 drop of 20% pancreatic extract*
to B add 5 drops of 20% pancreatic extract
to C add 10 drops of 20% pancreatic extract
to D add 20 drops of 20% pancreatic extract

See that the contents of each tube is pink; if not so, add some $N/_{20}$ NaOH. Place the tubes in a water bath as 37° C. for half an hour, then cool the tubes as quickly as possible by placing them in iced water and titrate, each with $N/_{20}$ NaOH until a faint pink color is obtained.

Replace the tubes simultaneously in the water bath and leave for a further half hour. More acid will have been produced. Determine the extra amount by titration as above directed.

In accepting the hypothesis that ferments are examples of catalysts there are, however, certain facts which, in the present state of our knowledge are difficult of explanation and I believe we cannot do better in reviewing the subject of ferment action than to systematically examine these facts. In so doing we shall incidentally consider most of the properties of ferment action. Those omitted we shall consider later on. The most important of these apparent differences are:

1. Most ferments are remarkably specific in their action; inorganic catalysts are very much less so. Thus, in the case of the ferments which bring about inversion of disaccharides, this specificity is clearly shown. There is a special ferment for each of the three disaccharides, maltose, lactose and cane sugar and the one of these cannot replace the other.

Still more strikingly is this specificity of ferment action demonstrated in the fact that certain ferments, such as zymase (the ferment expressed from yeast), will act only on bodies having a certain configuration, i. e., having their side chains arranged in a certain way. Thus, there are two varieties of dextrose which differ from one another solely in the fact that the side chains are arranged in different positions with relation to the central chain of carbon atoms. This form of isomerism is called stereoisomerism because the two bodies rotate the plane of polarized light to an equal degree in opposite directions. Zymase acts on one of these but not on the other, and there are innumerable examples of the same kind. Indeed, of all bodies that exist in two stereoisomers only one is found in living cells and it is on this variety alone that the ferments that are found in animals can act.

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*The pancreas of the pig, after removal of as much fat as possible is minced, and 20 grams of this rubbed up with quartz sand and then gradually mixed with 100 c.c. water and the resulting extract strained through muslin. Filtration through paper is not advisable because some of the ferment may stick in the filter.

Evidently there must be a union between the substance acted on and the ferment and for this union to take place the ferment must possess a configuration which corresponds accurately with that of the substance acted on. Emil Fischer has aptly compared this relationship with a lock and key: the key must be shaped to fit the lock. This specificity does not, however, in itself disprove the close relationship between ferments and inorganic catalysts, for on the one hand there are several ferments which do not exhibit this property, and on the other, there are inorganic catalysts which do. Thus, lipase, the fat-splitting ferment of pancreatic juice, decomposes not only fats but to a greater or less degree a great number of bodies of the same general build (i. e., esters), and tyrosinase can decompose, not tyrosin alone, but all phenol compounds. Conversely, the hydrogen ion—to the presence of which acids owe their calalytic powers—can decompose the ordinary esters (i. e., of acids containing the carboxyl or COOH group) but it has no action on the sulphonic esters, and there are other examples. However, ferments are certainly much more specific in their action than inorganic catalysts.

2. *The influence of temperature.* As this is raised in the case of inorganic catalysts the reaction becomes about doubled in rapidity for each rise of 10° C., whereas in the case of enzymes it becomes increased up to a certain temperature which is called the *optimum temperature* beyond which, as the temperature rises, it is first of all slowed and finally disappears altogether.

Experiment IV. To show the influence of temperature on the accelerating effect of lipase on the hydrolysis of milk fat.

To successfully carry out this experiment it is essential that the ferment solution and the prepared milk be at the temperature of observation before they are mixed.

Into each of four test tubes, labelled A, B, C, and D, place 5 c.c. of neutralised creamy milk and one drop of phenolphthalein. Cool A to about 10° C. by placing it in a beaker with running tap water. Leave B at room temperature (about 20° C.). Place C in a water bath at 37°-40° C. and D into one at 60° C.

In each of four other test tubes place 5 c.c. of a neutralised 10% pancreatic extract, and place one of these tubes along with each of the others.

After the contents of the test tubes have had time to come to the desired temperature (about five minutes), pour the extracts into the corresponding milk tubes. If the pink color of the milk has faded, add sufficient $N/_{20}$ NaOH to bring it back to pink. Carefully note the time of mixing for each tube and in 30 minutes remove the tubes to a beaker containing iced water and determine the amount of acid which has formed, by titration with $N/_{20}$ NaOH.

It will be found that both the 10° and the 60° mixtures show less active hydrolysis than do those kept at 20° and 37°.

By placing the two former tubes at 37° C. for half an hour, however, and again titrating as above, it will be found that the cold merely retarded the activity of the ferment, whereas the heat destroyed it (i. e., in the former case hydrolysis becomes marked at 37° C., in the latter it does not).

This peculiarity of enzymes as compared with inorganic catalysts need not in itself disprove the analogy between the two, because ferments do not form true solutions but colloidal solutions. Colloidal solutions are really fine suspensions of ultramicroscopic particles; there is no splitting into ions of the dissolved substance, as is the case with true solutions, but the colloid is suspended in the water or other solvent. Such a solution is therefore di-phasic, that is to say it is composed of innumerable particles of one kind suspended in a menstruum of some other substance. On account of this, the surface area of the menstruum is enormously increased for, instead of having surfaces only where it comes in contact with its container or with the air, it has surfaces all through it where it comes in contact with the colloidal particles. Rise in temperature alters the extent of the surface area and therefore introduces an influence which progressively opposes catalysis which is dependent upon it. Although inorganic catalysts in true solution show no optimum temperature but increase in activity in proportion as the temperature is raised, inorganic colloidal catalysts may show an optimum temperature. Thus spongy platinum shows an optimum temperature in its action on a mixture of hydrogen and oxygen. It has therefore been suggested that it is because they are colloids that ferments exhibit the property of optimum temperatures.

3. Inorganic catalysts frequently carry the reaction to a farther stage than that attained by the action of enzymes. Thus acid breaks down the protein molecule much more completely than do the proteolytic enzymes. This difference is perhaps explained by the fact that enzymes are retarded in their activities when there comes to be a certain accumulation of the products of the reaction present. This may cause the final stages in the reaction to become so slow as to be almost inappreciable. This decrease in activity is partly due to a union between the ferment and the products of its activity.

4. *The velocity constant in the case of inorganic catalysts remains unchanged throughout the reaction whereas in the case of ferments it either becomes less or greater as the process proceeds.* It will be necessary to explain what is meant by the velocity constant. When a substance is changed by catalytic action, it is, of course, constantly being diminished in concentration so that less and less of it remains to be acted on. This implies that there are fewer molecules present for the same amount of catalyst to act on and consequently that the amount changed in a unit of time gets progressively less. At any moment of time, therefore, the rate of catalysis will be proportional to the amount of substance (substrat) left. To understand this we must digress for a moment into pure chemistry. If we suppose that two substances A and B react to form two other substances C and D, then, by the law of mass action, the reaction will not go on to completion but will stop when a certain equilibrium is reached. The reaction can be represented by the equation $A + B \rightleftharpoons C + D$. In some cases this reaction proceeds until either A or B has practically disappeared (i. e., the equilibrium point is very near the right of the equation) as is the case in the inversion of cane sugar:

$$C_{12}H_{22}O_{11} + H_2O = C_6H_{12}O_6 + C_6H_{12}O_6$$

Taking place as it does in an excess of water, and there being very little tendency for it to go in the opposite direction (cf. reversible action). The only thing which will influence the velocity of the above reaction is the concentration of cane sugar; in other words the velocity of the reaction at any moment will depend solely on that of the moment preceding.

Expressing this in a formula, we have

$$\frac{\delta x}{\delta t} = KC$$

where δx represents the amount of sugar inverted in the time δt, C represents the concentration of sugar at this time and K is a constant which varies with the type of the reaction. The sign δ indicates that the reaction is a constantly changing on so that δ_2 and δt represent such infinitely small amounts that they cannot be measured. By methods of integration, however, it can be shown that the above equation may be written

$$K = \frac{1}{T_2 - T} \text{ log. nat. } \frac{C_1}{C_2}$$

thus permitting us to find the value of K (C_1 C_2 being the concentrations of cane sugar at the times T_1 T_2).

The value of such an equation is that it gives us the velocity constant of the reaction. In simple language, it gives us a figure representing what amount of inversion would occur in each unit of time provided the cane sugar were kept in constant amount. When for example it is stated that K for a particular strength of acid acting on cane sugar solution is 0.002, this means that when volume, concentration of acid and temperature are constant in a gram-molecular solution of sugar, 0.002 gram-molecule of sugar would be inverted the first minute and 0.002 gram for each succeeding minute, provided we could keep the solution constantly a gram-molecular one, i. e., provided we could add sugar just as quickly as it becomes inverted.

It is therefore important to determine the value of K, for this is what really expresses the strength of the ferment: Under constant conditions, the more powerful the ferment the higher is K.

At first sight it may appear of little practical importance to determine K. In our present discussion concerning the nature of ferment action, it is however of great value for, whereas with inorganic catalysis it is really of constant value, with ferment action it is not so. Thus when cane sugar is inverted by sucrase —a ferment present in the intestine and in yeast—the constant gradually rises; for most other unimolecular reactions mediated by ferments it gradually falls.

Where there is a great excess of substance to be acted on, in comparison with the amount of ferment present, the velocity constant will be abnormally larger and indeed in such cases it will be found that a more constant value is obtained when we compute the absolute amount of substance decomposed. This fact has been noticed by us in connection with the hydrolysis of glycogen in the liver. When there is an excess of glycogen present the amounts which disappear in equal intervals of time after death are the same: when, on the contrary there is not much glycogen, the amount which disappears gradually declines, but, if K be computed by the above equation, it is found to be the constant.

In the large amount of recent work which has been done with the object of discovering the cause of this variation in the velocity constant in the case of ferments, four important conditions have been recognized. 1. Reversibility. 2. Gradual destruction of the ferment. 3. Combination of the ferment with products of the reaction. 4. Autocatalysis.

Of these four influences the only one which could be held accountable for an increase in the activity of the ferment is autocatalysis; by its action, the ferment produces substances which intensify its own activity.

In some cases at least—e. g. the action of invertase on cane sugar—these are acid bodies, a moderate increase in acidity favouring the action of this ferment.

The other influences all tend to retard the reaction and lower the value of K.

Negative autocatalysis occurs when by its action the ferment produces products which interfere with its activity.

Gradual destruction of the ferment and union of the ferment with the products of its activity will manifestly decrease its power and there is plenty of evidence that both processes may occur. But the most important of all the causes of retardation of ferment activity is undoubtedly *reversibility of action.* It will be necessary to go a little more in detail into this process.

If instead of the above example of the inversion of cane sugar we take the saponification of an ester:

$$\underset{\text{(ethyl butyrate)}}{CH_3\,CH_2\,CH_2\,COOC_2\,H_5} + H_2\,O \rightleftharpoons \underset{\text{(butyric acid)}}{CH_3\,CH_2\,CH_2\,COOH} + \underset{\text{(ethyl alcohol)}}{C_2\,H_5\,OH}$$

we shall find that the equilibrium point is not so near the position of complete hydrolysis; in other words, the tendency for the bodies produced of the hydrolysis to reunite and form the original substances is quite marked, so that, before all the ethyl butyrate has been decomposed, the reaction has come to an end. But long before this equilibrium point is reached, there will have existed a progressively increasing opposition to the break down of the ester, as a consequence of which when ferments are used to accelerate the reactions the velocity constant as determined by the above equation, will gradually fall.

Conversely in a mixture of ethyl alcohol and butyric acid there is very slow synthesis to ethyl butyrate—the equilibrium point spoken of above can be reached from either side—and here again ferments accelerate the process, they induce a recognizable synthesis within a short time. This fact is beautifully demonstrated in the following experiment:

Experiment V. To show that lipase, besides accelerating hydrolytic decomposition, can also accelerate synthesis when it is added to a mixture of the products of hydrolysis (reverse action). Label two flasks (250-300 c.c. capacity) A and B. Into A place 20 c.c. 20% extract of (pig's) pancreas; 100 c.c. water; 50 c.c. of approximately 30% alcohol (1 vol. alcohol, 2 vols. water); and 35 c.c. N/10 butyric acid. Into B place 20 c.c. 10% extract of pancreas and 100 c.c. water and boil so as to destroy the ferment. After cooling, add 50 c.c. alcohol (30%) and 35 c.c. N/10 butyric acid.

Cork the flasks and allow to stand for half an hour at room temperature. Compare the odor in the two flasks. It will be found that in A the characteristic odor of ethyl butyrate has developed (pineapple) whereas there is none of it in B in which the ferment was destroyed. Continue the observation for half an hour in the water bath at body temperature.

The reverse phase of certain reactions is probably the cause of at least some of the synthetic processes which occur in the animal body. A great difficulty in accepting such a view, however, is the fact that the equilibrium point of all hydrolytic reactions is, in the presence of an excess of water, so near complete hydrolysis that very little synthesis can be possible. That is true so long as the substance synthesised is soluble, but if it be nearly insoluble in water, or if it be immediately removed from the site of the reaction by diffusion, or in any other way, then it is obvious that it will go on being synthesised by the reaction. Thus in the intestine neutral fat is hydrolysed by the lipolytic ferments into fatty acid and glycerine, which are absorbed into the epithelium, where they again come under the influence of intracellular lipolytic ferment. This latter will tend to accelerate the synthesis of neutral fat from the fatty acid and glycerine until the equilibrium point of the system (fat acid $+$ glycerine $\rightleftharpoons$ neutral fat $+$ H_2O) is again reached, but this point although it is near the right hand of the equation because of the excess of water present, will really never be reached for the reason that the neutral fat, as quickly as it is formed, will become deposited in insoluble globules in the protoplasm and thus be removed from the equation. Provided one of the substances synthesised is insoluble and can in some other way be removed from the reaction, it is plain that, even though the equilibrium point is very near to the right hand of the equation, i. e., very near to that of complete hydrolysis, yet the reversion will be sufficient to do all that is required of it.

Results such as the above have prompted many to jump to the conclusion that it is by such reversible action that all synthetic processes occur in the living organism. But the demonstrable synthesis of an ester, of which ethyl butyrate is an example, must not be taken as evidence that all other syntheses are explainable on the same basis. For example, we have seen above that in the case of cane sugar the equilibrium point in the equation is that of complete hydrolysis, that no measurable amount of cane sugar is formed when dextrose and laevulose are allowed to act on one another, nor does any cane sugar appear when sucrase is added to the mixture. If instead of sucrase and its action on cane sugar, we take another of the sugar ferments, namely maltase—the ferment which accelerates the decomposition of maltose into two molecules of dextrose—there appears, at first sight, to be convincing evidence of synthesis as a result of the acceleration of a reversible reaction. Thus if maltase be added to a strong solution of dextrose a disaccharide very like maltose soon becomes formed. But closer investigation of this phenomenon has shown that the sugar thus formed is not maltose but its stereoisomer isomaltose, and further it has been found that maltase—the ferment which induces this synthesis—has absolutely no power to hasten its hydrolysis. The maltose has induced the synthesis of a sugar upon the hydrolysis of which, however, it can exercise no control. The only ferment which can induce the hydrolysis of isomaltose is emulsin and curiously enough if this ferment be added to a strong solution of dextrose it causes maltose to be formed.

To understand these results we must remember that ordinary dextrose is a mixture of two stereoisomers designed a and β. When two molecules of a dextrose condense (i. e., fuse together with the loss of a molecule of water) maltose is formed, but when two molecules of β dextrose condense isomaltose results. Maltase therefore can hasten the condensation of β dextrose to isomaltose but it has no influence on the conversion of this into dextrose; for this, emulsin is necessary.

These perhaps seemingly unnecessary details are introduced here to illustrate in what state the study of ferment action at present stands. They show us that for further progress in our knowledge of ferment action we must rely on accurate chemical investigation. For important work in ferments a knowledge of organic and physical chemistry is essential.

We must conclude from the above evidence that ferments must be something more than mere catalysts, nor is it possible, as Bayliss has attempted, to explain away their apparent peculiarities of action on the grounds that they exist in colloidal solutions. No doubt this explains some of the differences in behaviour between them and inorganic catalysts (e. g. the effect of temperature, etc.) but it is difficult to see how their phenomenal specificity in action can be explained on the same basis. And yet such an attempt has been made. Bayliss believes that the ferment adsorbs the substance to be acted on and that this adsorption only occurs where there is a harmony between the adsorbing substance (the ferment) and the substance adsorbed (the substrat). Adsorption is a property of colloids, it is not the same thing as absorption but consists in a surface condensation on the colloidal particles of substances brought in contact with them. Thus it is well known that carbon (charcoal) takes up large quantities of gases, it occludes or adsorbs them, it does not (at first at least) absorb them. Carbon in suspension similarly adsorbs many dye stuffs; sugar, acetone, etc., and other colloids have the same property. Although carbon can adsorb a multitude of substances, other colloids are much more specific, they will adsorb only certain things, thus when gum mastic is shaken with a solution of Witte's peptone it will adsorb some of the proteoses but has no influence on others, and gelatin will take up acid fuchsin readily, but only small quantities of congo red. Perhaps then, after all, the specificity of ferments is due merely to the fact that being colloidal in nature they adsorb specifically.

It is very significant in this connection to note that in their solubilities there exists a distinct relationship between the ferments and the substrats on which they react. Thus trypsin is very soluble in water and acts on water soluble proteins, lipase is soluble in fat solvents.

Notwithstanding the very strong case that is made out for the catalytic hypothesis there are certain facts which would seem impossible to make conform with such a view. Some of these are as follows:

1. Catalysts cannot initiate a chemical reaction, they can only accelerate (or retard) one which is already in progress. To explain the action of pepsin on protein on the assumption that pepsin is merely a catalyst therefore, we must imagine that a pure sterile solution of protein is slowly undergoing spontaneous peptonisation. There is no evidence that this is the case.

2. Dextrose can undergo three distinct and separate types of decomposition according to the ferment allowed to act on it. These are alcoholic fermentation, butyric acid fermentation and lactic acid fermentation. It is difficult to see how simple

catalytic action can be held responsible for all three results. The ferment must not only initiate the changes but also direct their course.

3. When certain ferments, e. g. rennin, pepsin, etc., are inoculated in animals they cause specific antiferments to appear in the blood of the inoculated animal.

Thus when antirennin serum is added to milk it greatly hinders clotting on the subsequent addition of rennin. Like antitoxins we have antiferments. It is quite probable that powerful antiferments are produced in the animal body for the purpose of protecting the tissues from attack by ferments. It is on account of antiferments in them that intestinal parasites can exist in the intestine and the immunity from digestion which the mucosa of the gastro-intestinal tract enjoys, is believed to be due to the same cause. But there is considerable doubt regarding this claim. Fresh pancreatic juice when injected into the empty intestine digests its walls. When food is present in the intestine it evidently prevents digestion of the walls by diverting the ferment to itself.

Antiferments, however, undoubtedly exist plentifully in the animal body and it is very difficult to see how this can be explained on the physical (catalytic) basis.

To conclude, there are several general considerations regarding ferments that it will be well to say something about, especially since in those to be mentioned there have been some considerable changes of opinion during recent years.

In the earlier work on ferments each newly discovered enzyme received some name which in some cases was quite inappropriate. Many of these names are retained such as pepsin, trypsin, ptyalin, etc., but it is now customary to name the enzyme according to the substance on which it acts. This is done either by replacing the last part of the name of the substance acted on by the termination -ase, e. g., the ferment which inverts maltose is called maltase, or by merely adding -ase to the name of the substance acted upon; thus, the ferment which hydrolyses glycogen is called glycogenase.

Most of the enzymes in the animal body accelerate hydrolytic processes and the following varieties of these are of importance.

The *amylases*—accelerating the hydrolysis of polysaccharides, e. g., ptyalin (in saliva), amylopsin (in pancreatic juice), glycogenase (in liver), diastase (in malt.)

The *invertases*—accelerating hydrolysis of disaccharides, e. g., maltase, lactase and sucrase (in succus entericus).

The *proteinases*—accelerating hydrolysis of proteins, e. g., pepsin (in gastric juice), trypsin (in pancreatic juice), erepsin, intracellular proteinases.

The *lipases*—accelerating disruption of neutral fats, e. g., steapsin (in pancreatic juice), intracellular lipases.

Arginase—accelerating hydrolysis of arginin into urea and ornithin, (intracellular).

Urease—accelerating hydrolysis of urea to ammonium carbonate.

Others accelerate oxidative processes and are called *oxidases.* These are intracellular. Others bring about the displacement of an amino group by hydroxyl (denitrifying ferments). Others cause coagulation (coagulative ferments) e. g., thrombin, rennin.

So far it has been impossible to prepare enzymes in a pure state although, being colloidal in nature, they are readily precipitated or adsorbed along with other colloids.

Reactions brought about by intracellular enzymes are very usually inhibited when there comes to be a certain accumulation of their products of action. Thus yeast ceases to ferment sugar when the alcohol has accumulated to a certain percentage. This action is partially due to a toxic action of the alcohol on the cell thus paralysing its power of absorbing the substance to be acted on by the intracellular enzyme, for if these products be not in some way removed they will ultimately kill the cell and stop the fermentation altogether. We have seen above how the accumulation of products may also interfere with the activities of enzymes but in this case the enzyme does not suffer destruction and it resumes its original activities on removal of the products.

Enzymes, both intracellular and extracellular, are very sensitive towards the inorganic composition of the medium in which they are acting. For the intracellular enzymes this is what we should expect when we bear in mind the profound influence of inorganic salts on the heart beat and on cell growth and division. This influence of salts and of reaction (acidity, etc.) on the life of the cell is so pronounced as to lead some observers to believe, that abnormal cell multiplication in the body, as in the case of tumour formation, is due to changes in the inorganic composition of the tissue fluids. Extracellular enzymes are also very susceptible to the influence of inorganic salts but more especially so towards the reaction of the solution. In terms of modern chemistry we may say that the concentration of H+ and OH— ions has a profound influence on the activities of enzymes. Most of the enzymes of the animal body perform their action normally in the presence of a slight excess of OH— ions, i. e., in faintly alkaline reaction. Indeed the only exception of importance to this is the pepsin of gastric juice which normally acts in an acid medium. An excess of either OH— or H+ ions inhibits the activity of the enzyme and usually destroys it permanently. The activities of enzymes are also influenced by light, many of them being destroyed by sunlight; cells such as microorganisms are likewise affected.

Before being secreted the digestive enzymes exist in the cells which produce them as inactive precursors called *zymogens.* The granules seen in resting gland cells are of this nature. The activation of the zymogen, in other words its conversion into the enzyme, occurs after it has left the cell and this has been considered as another safeguard to digestion of the cell. Sometimes the activation does not occur until the zymogen has travelled some distance along the gland duct as in the case of the proteolytic ferment of pancreatic juice. Till it reaches the intestine, this exists as trypsinogen (the zymogen) but it is here acted on by another ferment-like body produced by the intestinal epithelium and called enterokinase.

Lacerations of the Cervix, Viewed from the Standpoint of the General Practitioner.

By N. C. YARIAN, M. D., Cleveland.

Ever since the early days of medicine, the births of children have, to a large degree, been attended by the general practitioner, and even today, with the strong tendency toward specialization in all fields of medicine, the men in general practise continue to do the bulk of confinement work. It seems probable that this condition will continue in the future as it has been in the past, and it seems peculiarly fitting that the expectant mother *should*

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lean upon the family physician to carry her through this most trying ordeal of her life. No kind of practise presupposes a more intimate and confidential relationship between patient and physician than that of the lying-in-room. Again, it is almost necessary that the family physician attend the confinements of his families, that he may hold their other work for we are all familiar with the prestige which the physician has with the family in which he has gained repute by his ministrations at these important epochs in the family history.

I do not believe we are equally familiar with the factors which sometimes rob him of his own exalted position in these same families, and which cause them not only to drop him but to heap unending censure upon him. Personally, I know of no more important factor in causing this discord than the misconception of the laity concerning the occurrence of, the importance of, and the proper treatment of lacerations of the cervix.

Since it has long been the practise to repair, at once, all lacerations of the perineum and since the laity in general have learned that this is the proper management of such injuries, they have come to look upon cervical lacerations as being in the same class and as demanding the same treatment. The result is that frequently the attending physician is censured in after years or as soon as it is discovered that he has not repaired, at the time of confinement, any lacerations of the cervix which may have occurred. Nor do I believe that the laity are wholly to blame for their misconceptions concerning this question.

This discord seems particularly likely to arise when the patient comes into the hands of some other physician or surgeon for treatment or for operation upon the lacerated cervix. I recall during my student days and later during my hospital experience having heard unfavorable comment made concerning the condition of the cervix in a number of cases which had come for repair of the lacerations. Some such remark as the following was sometimes made: "You were certainly left in terrible condition, by the doctor who confined you." In later years, having attended a considerable number of confinements myself, it has happened to me to have this same remark, or a similar one, made to patients whom I have attended and who have from one cause or another, had this injury to the cervix result.

Having a strong desire to do the right thing by my lying-in patients and an equally strong desire to hold what prestige I may have obtained with my confinement cases, I have become interested in an enquiry into the views of the best writers on obstetrics upon lacerations of the cervix, their relative frequency, their causes, the symptoms and diseases which may justly be attributed to them, their proper treatment both immediate and subsequent, and the proper attitude of the surgeon into whose hands the case may later come for operation. Also if an operation should seem necessary, is it wise or expedient to perform it during the active child bearing period?

Concerning the occurrence of lacerations of the cervix in primiparous or even in multiparous births, they appear to be the rule, depending upon the questions of ease or difficulty of dilatation of the cervix, whether the birth is a dry one, upon the size of the child's head, the need of manual dilatation, the necessity for instrumental delivery and the general difficulty of delivery.

In general it may be said that cervical lacerations occur entirely beyond the control of the accoucheur and that he should seldom be blamed for their occurrence. Of course it is presupposed that he will not apply forceps until the cervix has been thoroughly dilated, otherwise his efforts at delivery would certainly tend to produce the injury.

Allbutt and Playfair in their System of Gynecology have this to say concerning the occurrence of cervical lacerations: "In some few labors the os uteri, solely by stretching, expands to a size large enough to let the child pass. But in most cases, as the force which is dilating the os increases, this force shortly before delivery, becomes very great, and the enlargement is finished, not by stretching but by tearing. If the accoucheur add to the force by pulling with forceps before dilatation is complete the tearing is, in general, greater than in delivery left to nature. Rents, great or small, are so frequent that their presence is a valuable presumptive evidence of antecedent childbirth." Their frequency is then a matter worthy of consideration and their proper treatment a matter of importance.

Should tears of the cervix be sewed up at once? Allbutt and Playfair say that "some writers have advised accoucheurs to sew up all tears of the cervix at once." They believe this difficult and troublesome, moreover, as Freund has pointed out, these tears are irregular and in the condition of the parts after delivery it is difficult to follow them up. "The accoucheur may think he has sewn up the whole of a tear when there remains a gap above or outside his line of suture which he has not perceived and his stitches, by preventing free exit of discharge from such a spot, may favor retention and decomposition of discharge thus favoring infection. During involution of the uterus these tears heal to a large extent." They therefore agree with Freund, that suture of lacerations of the cervix immediately after delivery is only desirable when required to stop bleeding.

Stanley P. Warren says: "Most gynecologists advise against immediate trachelorrhaphy except as a last resort to check bleeding, because the majority of cervical lacerations heal spontaneously. Sutures, though tight enough when first inserted, become loose after a few hours from the rapidity of involution and there is danger that swelling will close the canal, interfering thereby with drainage."

I had this happen in a case of my own in which suture was necessary to stop hemorrhage from the circular artery. Two weeks after confinement I removed the stitches from the cervix and a large clot, the size of a fist, rolled out of the uterus. The cervical lacerations had not healed, but required subsequent operation. This case had run a perfectly aseptic course, else the clot might have made trouble.

Charles Jewett says: "Cervical lacerations should be closed immediately by suture in case they give rise to troublesome hemorrhage. Otherwise immediate suture is generally inadvisable."

H. J. Garrigues says: "Since most cervical lacerations heal by nature's sole efforts, they do not call for immediate treatment unless they give rise to hemorrhage. Otherwise we would without necessity expose the patient to infection during the primary operation."

In his Textbook of Obstetrics J. Clarence Webster, Prof. of Obstetrics in Rush Medical College, says: "In serious cases the cervix may be exposed with a speculum and the laceration may be closed with chromic catgut. Immediate repair should, however, never be done unless the facilities are such that perfect technic may be observed; otherwise the risk of infection is great. In ordinary practise the operation is rarely necessary. Reparative measures should be postponed for weeks or months."

W. A. Dorland, University of Pennsylvania, says: "Cervical lacerations seldom fall into the hands of the obstetrician for repair. It is only when the laceration is extensive enough to involve the circular artery or its branches, thereby inducing hemorrhage, that immediate repair becomes necessary. The primary operation upon the cervix has not been followed by the best of results and has fallen into disrepute."

Hirst says: "The cervix is injured to some extent in every labor, but serious tears, that cause at the time profuse hemorrhage and give rise to symptoms subsequently, are comparatively rare. It is a moot question whether a torn cervix should always be repaired in the *early puerperium.* In general practise the following arguments are usually advanced against primary repair. Stitches placed in a relaxed cervix directly after labor will probably not be tight enough at the end of 24 hours to close the wound. To place them properly requires considerable skill and necessitates dragging the cervix into view by bullet forceps. The necessary instruments are rarely to be found in the general practitioner's armamentarium, and many lacerated cervices repair spontaneously. In a well equipped clinic or in private practise of a specialist the primary repair of lacerated cervices is recommended. It is the author's practise. It is better to wait 48 hours after labor. Clinical experience has shown that better results are thus obtained than by immediate operation. Good results are also obtained by operation comparatively late, say at the end of two weeks. Union in 95% of the cases can be obtained any time after 48 hours."

Edgar says: "Some writers have advised the immediate repair of all cervical lacerations, but it is now pretty generally conceded that it is neither safe nor necessary, since it increases the danger of sepsis and has no compensatory advantages, but rather interferes with drainage. Very deep lacerations, however, that cause severe hemorrhage and favor extension of infection to the parametrium should be promptly sutured."

I have found but two writers who seem to hold views adverse to the above. Lusk says: "If no hemorrhage occurs, cervical lacerations are rarely recognized except by physicians who take the pains to invariably investigate the postpartum condition of every patient. As a rule, with strict antisepsis they heal rapidly during involution. Nevertheless, it is my present custom (1893) to close all extensive lacerations with a continuous catgut suture. After expulsion of the placenta the operation is easy, is devoid of risk and is followed by speedy union."

Robert Jardine, Senior Physician to Glasgow Maternity Hospital, says: "When the tear is large, even if there is no hemorrhage, it should be stitched at once."

The general consensus of opinion is greatly preponderant that the accoucheur is not responsible for the occurrence of, nor to be blamed for not immediately repairing cervical lacerations. What is more, it is no fairer for a physician to pass an opinion upon the results of a cervical laceration when he knows nothing of the circumstances which produced it, than it is fair to pass an unfavorable opinion concerning the result of a fractured bone when the circumstances of, and the severity of, the injury are not known.

It has happened to the writer, a number of times, to be severely censured by his patients for not having immediately repaired a cervical laceration. Patients are now familiar with the fact that perineal lacerations should be immediately repaired and they easily confuse this fact with cervical lacerations and inasmuch as we do not always explain the different management in the two conditions, their censure is not to be wondered at. The lying-in patient has come to almost demand that she be left in as good condition as she was before her confinement. Unfortunately this is not always possible.

Add to this feeling some unfavorable remark made by some other physician into whose care she may happen to come subsequently and you have a situation which has wrongfully robbed many a doctor of his hard earned prestige with a good family.

Such an occurrence happened to me so recently as to be acutely fresh in my mind. I had confined Mrs. M. some four years ago, a difficult occipitoposterior position which required instruments. The child lived and she made a good recovery. The family was grateful, paid my fee, and referred some of their friends to me.

About two years later she consulted me about a leucorrhea and examination showed a moderately deep cervical laceration and a catarrhal condition of the cervical canal. The condition did not seem to me at all serious or demanding anything more than local applications to the cervix and canal. As she was still a young woman, in the active child bearing period, I did not advise operation. After some half dozen treatments she did not return, some friend had prevailed upon her to see another physician. The other physician examined her, told her "she had been left in terrible condition and that an immediate operation was necessary." He called in a neighboring surgeon who confirmed his diagnosis and sent her to a hospital at once. He repaired the cervix and took pains to censure me for not repairing it at the time of confinement.

Subsequently the patient and her husband called upon me in high anger, and informed me of what a fine doctor I was.

I explained to her as best I could that cervical lacerations are best not repaired at the time of delivery, that hers did not seem to me in such bad condition as to need repair when she consulted me and especially as she had only one child, was in the active child bearing period of life and was liable to become pregnant again, and that another birth would likely again tear the cervix if it *had been* repaired.

She then explained how kind the surgeon had been to her as she had become pregnant some two months after the operation. She returned to him, told him her fears that she was pregnant and that she was afraid if she was confined again it would tear the cervix once more. He was of the same opinion and said it would be a pity to have the good result of the operation spoiled and to save her this dire result he relieved her of the pregnancy.

I am of the opinion that when trachelorrhaphy is done during the active child bearing period that the fear of subsequent injury from childbirth *does* materially tend to reduce the birth rate of that mother and might lead to something more serious, as in the above case.

What are the indications for the operation and what conditions result from cervical laceration, if not subsequently repaired?

Edward P. Davis, Jefferson Medical College, says: "Observation shows that a patient may sustain a considerable laceration of the cervix which does not heal and that good health may continue. It is believed by many that malignant disease of the cervix is more apt to occur after laceration than in patients to whom this accident has not happened. Aside from malignant disease the effect of a tear upon the general health depends not only upon this lesion but upon the presence or absence of infection, degenerative processes in the glands of the cervix and prolapse of the mucous membrane. If the uterus be found but little enlarged, if the lips of the cervix are not hypertrophied, if the mucous membrane is not chronically inflamed and covered with patches of granular degeneration and if the glands in the cervix are not enlarged, the presence of a tear is not a valid indication for closure by operation."

Howard Kelly in his Operative Gynecology says: "The mere fact of the existence of a tear, however deep, by no means constitutes an indication for operation. I constantly receive patients who have been sent long distances for the surgical treatment of harmless injuries of this kind. Cases suitable for operation are those only in which the lips are infiltrated, congested, and pouting, oftentimes with choked glands, pouring out a tenacious mucous secretion. A potent reason for operating upon these diseased cervices is the remarkable frequency with which they are found associated with cancer. Ninety-eight percent of the cases of squamous celled cancer of the cervix in my clinic at Johns Hopkins Hospital had had children, so that the proportion of cases in nulliparae was extremely small." *It would therefore seem obvious* that it is the duty of the general practitioner to examine his confinement cases some months after confinement and if the cervix is unmistakably diseased and cannot be caused to heal, *to advise repair.*

Emmet has been of the opinion that cervical lacerations are the cause of nervous symptoms as a result of the upper angle of the wound having nerve fibers bound up in the scar tissue. He seems to have attributed nervous symptoms to this cause even when no complaint had been made of the cervical deformity. This seems at present to be rather generally discredited because of the fact that operation upon so many of these nervous patients has not only failed to relieve their nervousness but it has, in many instances, simply added the shock of the operation to aggravate them.

Conclusions.

1. Cervical lacerations are to a large degree unavoidable.

2. Their immediate repair, especially by the general practitioner, is neither wise nor practicable.

3. Secondary repair if performed during the active childbearing period may greatly limit the birth rate or even become a cause of "race suicide." It is better to wait until childbearing is probably well over with, unless the condition is *markedly affecting* the comfort and health of the patient.

4. Every accoucheur should frankly inform his patients that the cervix will likely be more or less lacerated, that he should

not be blamed for the occurrence, and that it is not wise for him to repair the laceration at the time but that nature will probably heal it.

5. It is a wise plan to examine every parturient woman six weeks to two months after confinement to discover if repair will likely be necessary, as a safeguard against cancer.

6. When a case comes into the hands of another physician or surgeon for treatment, it is not only unfair to the accoucheur that he should censure him for not having repaired it immediately, but he should take the occasion to explain to the woman the facts as above considered.

7405 Detroit Ave.

Vaccine Therapy in a Case of Lung Abscess.

By P. A. JACOBS, M. D., Cleveland, Late Assistant in the Department for Therapeutic Inoculation, St. Mary's Hospital, London, Eng.

It is not my purpose to take up an exhaustive consideration of the various therapeutic agents employed in lung abscess, but to limit myself to a brief review of the condition and to illustrate, by the report of a case, the beneficial results that may be obtained by the use of vaccines.

Lung abscess, while comparatively rare, may develop in either previously inflamed lung tissue or healthy lung tissue. In the former, pneumonia is the chief causative agent, and of late years influenzal pneumonia has been considered of etiologic importance. In 1895 Hitzig reported a case of this variety. Fraenkel found that in 860 cases of pneumonia under his observation, abscess of the lung developed in 1.5%. In 49 cases of lung abscess operated upon by Tuffier, 23 followed pneumonia. Tilton, in an address before the New York Surgical Society in 1907, reported 20 cases of lung abscess that were operated upon at the various large hospitals in New York within a period of 10 years and in 15 of these cases pneumonia was the cause.

The other forms of lung abscess develop in previously normal lung tissue as a result of embolism, aspiration of foreign bodies, injuries, or penetration of the lung tissue by pus which has collected outside of the lung. The latter variety, which Stokes describes as perforating abscess, may have its origin in an empyema,

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caries of the vertebrae, hepatic abscess, or suppuration of the bronchial glands.

The symptoms vary somewhat with the etiology of the abscess. When due to pneumonia, there is failure of the consolidation to undergo resolution and dulness persists; there is a continuation of the fever, the temperature being characterized by fluctuations; on auscultation there is bronchial breathing; and as softening takes place cavernous breathing and large moist rales can be heard.

In another class of cases due to pneumonia, defervesence takes place in the usual manner, but in the course of a few weeks the patient develops irregular fever, cough, dyspnea, and later expectorates purulent sputum; or the patient may be seized with a paroxysm of coughing and expectorate a considerable quantity of pus. Relief may then follow and healing take place or the abscess may reform and a similar attack follow. The patient loses weight and becomes emaciated. In this class of cases one can safely make a diagnosis of lung abscess if, after a paroxysm of coughing and profuse expectoration of pus, a tympanitic note is elicited over a previously dull area.

When due to embolism, the respiratory symptoms may be masked by the general constitutional manifestations of the disease. As a result of aspiration of foreign bodies, pain, cough, dyspnea and septic temperature soon follow after the foreign body has been lodged in the lung. In the event that the abscess ruptures into the pleural cavity instead of into a bronchus, the condition becomes complicated by signs of empyema.

The sputum in abscess of the lung is very characteristic. Before rupture takes place it may be grass-green in color; after rupture into a bronchus the expectoration becomes abundant, is purulent and has a disagreeable odor. Aside from pus and bacteria it invariably contains elastic tissue and occasionally crystals of hematoidin, the elastic tissue being most characteristic. Although the sputum has a disagreeable odor, it has not that foul and putrid odor one finds in gangrene of the lung and putrid bronchitis.

While abscess of the lung is considered a serious disease, the prognosis depends on the cause, on the size and number of abscesses, and on the length of time the condition has been present. It is most favorable in abscess following pneumonia. The abscesses due to septic emboli are usually multiple and always fatal. Those due to the aspiration of foreign bodies are usually fatal, the mortality being somewhat reduced by employing bronchoscopy. The longer the abscess cavity persists the greater will be the danger of death from septic poisoning.

The therapeutic methods that have been applied in the treatment of lung abscess have been far from satisfactory. Medicinal treatment has proved to be of little value. The results from surgical treatment vary somewhat with the technic employed, the success in locating the abscess and the time at which operation is performed. The mortality from the latter treatment varies from 15 to 50%. Even if the surgeon is successful in locating and draining the abscess, he is confronted with a sinus that may take many months to heal, and yet one occasionally hears of a lung abscess being cured spontaneously. To wait for this to occur is a waste of valuable time on account of the grave complications which may arise as a result of the suppurative process.

The introduction of vaccine therapy has given to medicine an agent which, when used properly, promises much better results than have heretofore been obtained. It is impossible to state definite rules as to its employment in this condition, as there are no two cases alike; each individual case becomes, therefore, a problem in itself. It may be stated, however, that vaccines, when administered properly, can do no harm; therefore they should be given a trial in all forms of lung abscess regardless of the pathogenesis. By their use, either alone or in conjunction with surgical treatment, they may become a means of reducing the high mortality of this disease.

The case, which I have the opportunity of reporting, failed to respond to medicinal treatment and the patient was too weak for surgical interference: as a last resort vaccines were suggested.

The patient was a married woman, 22 years old. In June 1909 she had an attack of bronchitis which was associated with fever as high as 103°; this lasted about two weeks. At the time of this attack she was in the third month of pregnancy. About two weeks later she had another attack of bronchitis and from this time on she coughed more or less. During the seventh month of pregnancy she developed a severe cough accompanied with fever ranging between 100-103°; pulse 100-120; profuse expectoration of a disagreeable smelling, purulent material; chills; sweats; rapid breathing; and some cyanosis. Examination revealed rales over both lungs and dulness over the right upper lobe. She was becoming emaciated rapidly and the late Dr M. Rosenwasser, who was called in consultation, made a diagnosis of bronchitis with probably an abscess in the right upper lobe, as this region at various examinations exhibited signs of a cavity.

On October 10, 1909, a specimen of sputum was sent to my laboratory, as tuberculosis with cavity formation was suspected. This specimen was found to be free from tubercle bacilli.

On October 11, 1909, during the latter part of the eighth month of pregnancy, she had uterine pains and became very cyanotic, so much so that it became necessary to do a manual delivery, the patient giving birth to a well developed healthy child. After the birth of the child she felt somewhat better, but the fever, rapid pulse, cough with profuse expectoration of purulent material, and an occasional chill remained.

On October 12, 1909, another specimen of sputum was sent to my laboratory with a request for a complete report. This specimen was free from tubercle bacilli, but contained innumerable pneumococci and pus cells, and some elastic tissue.

On October 15, 1909, I saw the case in consultation with Dr I. J. Biskind and found the patient with a pulse of 124, temperature 103°, respirations 38 and very much emaciated. Physical examination showed diminished respiratory movement over the upper part of the chest on the right side. There was increased fremitus over the right apex and diminished fremitus from the clavicle to the fourth rib. Diminished resonance was found over the right apex and dulness from the clavicle to the third rib. The remainder of the pulmonary area showed no abnormality on palpation or percussion. Auscultation revealed an extensive bronchitis in both lungs and over the area of dulness there were coarse moist and bubbling rales and cavernous breathing. The heart was slightly enlarged on the right side; the sounds were clear with an accentuation of the second pulmonic.

Cultures were made from the sputum on serum-agar upon which there developed pure colonies of pneumococci. On October 17 an autogenous vaccine was prepared and on October 18 the patient received an inoculation of 5,000,000 pneumococci.

On October 25, 1909, one week after the first inoculation, there was no marked improvement aside from a slight drop in the temperature and pulse two days after the inoculation. On this day the dose was increased to 10,000,000 pneumococci.

On November 2, 1909, eight days after the second inoculation, the temperature was 98.6° and the pulse 78. The patient was cheerful and was sitting up in bed. She had very little cough and almost no expectoration. Her appetite was good and she expressed a desire to leave her bed. A day after the second inoculation the temperature dropped to 99° and the pulse to 82: from this time on she improved rapidly, the temperature being normal on the fourth day after the treatment. Another dose of 10,000,000 pneumococci was inoculated. Upon examination it was found that the rales, which formerly had been so numerous over the entire chest, had disappeared, and that over the area of dulness, which was now very much smaller, only a few fine moist rales were heard.

On November 9, 1909, seven days after the third inoculation, the patient had gained in weight; had resumed her household duties; and had been nursing her sick mother for the previous three days. Upon examination it was found that the dulness had disappeared, but a few fine moist rales were still present over the previously dull area. On this day another inoculation of 10,000,000 pneumococci was given.

Subsequent history: It is just a few days short of a year since this patient received her last treatment, and she now reports that she has been well since I last saw her on November 9, 1909.

This case was undoubtedly one of lung abscess, resulting from the bronchitis (which was probably a pneumonia) that occurred during the third month of pregnancy. Realizing that a single case is not sufficient to draw conclusions from, I have searched the literature in hopes of finding some statistics on the result of vaccines in lung abscess, but have been unable to find any. In conclusion permit me to say that this patient's recovery was, without a doubt in my mind, due to the administration of vaccines.

664 Rose Bldg.

A Report of Eight Cases of Syphilis Treated with Ehrlich's Arsenobenzol, "606."

By WILLIAM THOMAS CORLETT, M. D., L. R. C. P. Lond.,
Professor of Dermatology and Syphilology, Western Reserve University, Cleveland.

Nothing, since the time of Jenner, has so aroused the medical world as, what appears to be, the epoch making discovery of Professor Ehrlich's paradiamidodioxyarsenobenzoldihydrochlorid. Even before the long sought for *Treponema pallidum* was discovered by Schaudinn and Hoffmann in 1905, arsenic and its organic compounds were empirically known to possess a curative influence on syphilis.

The first of these synthetic compounds to receive attention was what was supposed to be metaarsenious anilide, introduced under the trade name "atoxyl". In 1903 the present writer had an opportunity of observing the effects of this drug in the treatment of syphilis in some of the German hospitals, and while there could be no doubt that in certain cases it had a marked effect in causing the lesions to disappear, yet apparently it had no advantages over mercury. Soon unfavorable effects on the optic nerve and other evidences of arsenical intoxication were reported, which dampened the ardor of many clinical enthusiasts.

In France "arsacétine" was recommended in trypanosomiasis, and used by some in the treatment of syphilis until atrophic changes in the optic nerve were observed to supervene. About two years ago this was superceded by benzosulfonoparaaminophenylarsenate of soda, which was thought to be less dangerous as it contained less arsenic, and sulphur entered into its composition. It was offered to the medical profession under the more euphonious trade name of "hectine". Apparently its usefulness was restricted to cases in which mercury did not produce the desired results.

In England and America these preparations were not received with much favor. In the former, traditionally conservative, a number of cases of blindness were reported following their use. Until about 11 months ago, therefore, specific chemotherapy, so far as the synthetic arsenic compounds were concerned, had not progressed beyond the laboratory stage, and their premature and indiscriminate use did much toward fostering at least a conservative scepticism against arsenic as a specific in syphilis.

Undaunted by these adverse and, in a few cases, fatal results Professor Ehrlich and his assistants continued their investigations and experiments, first on animals then on man, until success now seems firmly within their grasp.

It seems uncalled for at this time to reiterate what for months the German medical press has teemed with, and what already has been so ably presented in this country by Drs. Fordyce and Nichols.*

I will confine myself, therefore, to a summarized report of eight cases of syphilis treated with Ehrlich's arsenobenzol, representing various clinical types all of which were of marked severity, and such deductions as a study of them affords.

Ten ampulae of the drug were sent me for experimental purposes by Dr. Simon Flexner from the Rockefeller Institute for Medical Research.

Case 1. A. J., male, aged 25, Norwegian laborer, four months ago had what was called a "hard chancre" on the penis accompanied by one or two "soft chancres," followed by buboes. Present eruption began three weeks after the appearance of the initial sore. Has had some sore throat.

The patient came under observation Oct. 7, 1910. He complained of feeling ill and presented a pustulocrustaneous eruption over the whole body, varying in size from a small pea to a dime. Interspersed were lentil-sized dark red tubercles. In some lesions sanious pus oozed from the base of the crusts. The color of the implicated skin was dark red and many of the crusts were thick and of a dark color. In the areas involved there was a considerable loss of structure. No itching was complained of. The mucous membrane of the pharynx was slightly involved. The pillars of the fauces and the tonsils were congested, the latter were large and presented an uneven surface. An indurated nodule on the prepuce at its junction with the corona marked the site of the initial lesion. General adenopathy was marked. The eyes were examined by Dr. H. O. Ruh and found to be normal and no derangement of the internal viscera was detected. White blood count 8,600.

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*Jour. of the A. M. A., Oct. 1, 1910.

Seroreaction to both the Wassermann and Noguchi tests was mildly positive (+). The case was considered especially well adapted to Ehrlich's "606," because the disease was typical, it approached the malignant type and had been uninfluenced by previous treatment. He had taken pills only for a few days, about six weeks before applying for treatment.

Oct. 15 he was given 0.4 gm. of "606." Difficulty was experienced in preparing the drug for injection and I am indebted to Mr. L. C. Hopp for valuable assistance. Twenty c.c. of the solution were prepared, 10 c.c. were injected subcutaneously in the right infrascapular region and 10 c.c. into the muscles of the buttock of the same side. One and a half hours later he complained of very severe pain at the points of injection and 0.17 gm. of morphin was injected. After this he passed a comfortable night. The following notes are abstracted from the record.

Oct. 16. No special pain is complained of, although the point of puncture under the scapula is tender and swollen. The puncture in the buttock shows no change. Evening temperature 100.8°.

Oct. 17. The patient seems very cheerful and the eruption has perceptibly begun to fade. Temperature 99°.

Oct. 18. Some of the lesions show marked improvement.

Oct. 19. The lymphatic glands on the left side of the neck are enlarged and tender, feeling like marbles underneath the skin. No perceptible change in other regions. Temperature 100°.

Oct. 20. The eruption is steadily disappearing. The patient feels much improved in health and has a better appetite. The glands of the neck continue to enlarge, in the center of the cluster there is redness of the skin and slight fluctuation can be detected.

Oct. 22. Seroreaction to both the Wassermann and Noguchi tests negative (—). Temperature 98°.

Oct. 23. There is increased fluctuation in the cervical group of glands. The eruption has steadily improved and the fauces are normal.

Oct. 27. Desiccation nearly complete and crusts fallen. Marked subsidence of the glandular enlargement and area of fluctuation more circumscribed. Temperature 98°.

Oct. 29. Seroreaction continues negative. Temperature 99.4°.

Nov. 4. Glandular disturbance subsiding as is the eruption. White blood count 14,900. Temperature 97.4°.

Nov. 12. Seroreaction negative (—).

Nov. 16. As the pus was burrowing, an incision was made over the cervical glands and 4 c.c. of cheesy pus mixed with blood was removed. Otherwise the patient seems normal.

Nov. 22. Patient discharged, apparently well.

Dec. 3. Patient reentered hospital. Lymphatic glands generally enlarged, those of the postauricular group suppurating, a second incision was made allowing a small amount of pus to escape. This was examined for spirochaetae with a negative result. Superficial erosion size of dime on glans penis and adjacent surface of prepuce.

Seroreaction +. This is the first time that the reaction has been other than entirely negative since the "606" was given.

Case 2. J. B. S., male, aged 44, Italian, laborer, contracted a sore on the penis two months ago for which no special treatment was given. He came under observation Oct. 11, 1910 with a macular "raw-ham" colored eruption on forehead, forearms and legs. In the anal region, extending forward to the scrotum, were several elevated condylomata with a moist surface. On the foreskin there was an indurated sore together with several small lesions in the vicinity having a denuded, weeping surface. The lymphatic glands were palpable and the fauces red. A diagnosis of syphilis was made.

Seroreaction strongly positive (+++) in both the Wassermann and Noguchi tests. He was selected for the second to be given "606" because of the marked character of the lesions in the scroto-anal region.

On Oct. 16 he was given 0.5 gm. "606" in 8.5 c.c. of solution, injected subcutaneously in the right infrascapular region. Some pain was complained of for about three days. On the second day the temperature was 100.4°. The following notations were subsequently made:

Oct. 19. There is marked improvement in the lesions. The serous discharge has decreased and the condylomata have diminished in size and are flatter. No special disturbance at the site of injection.

Oct. 20. Chancre on penis gone. There is swelling and induration at the site of injection. Temperature 98°.

Oct. 22. Seroreaction positive (++).

Oct. 29. Seroreaction strongly positive (+++).

Nov. 12. Seroreaction strongly positive (+++).

Nov. 14. The patient has seemed entirely well for about six days. He was discharged from the hospital and directed to return for a blood test.

Case 3. J. H., male, negro, aged 30, American, coachman, admitted to Lakeside Hospital Oct. 17, 1910. In 1894 he contracted a "hard chancre" on the penis, which was not followed by any further symptoms as far as he was aware. On June 15, 1910 there appeared a generalized eruption of pustules, which he says have to some extent disappeared.

Notes of the case given briefly on admission are as follows: The eruption is symmetrically distributed and is not itchy. The superficial lymphatic glands show general adenopathy; they are very hard but not tender. The throat shows some hyperemia but no other lesions. In the groin there are two cord-like masses of lymphatic glands which are very hard. The lesions on the body, which are more prominent on the extensor surfaces possess a slight amount of induration, although the most constant feature is scaliness and to a less extent the formation of pus. Seroreaction strongly positive (+++). The eye grounds were examined and found to be normal.

On Oct. 18 he was given 0.5 gm. "606." This was held in suspension by 7.5 c.c. solution. A half hour later the patient complained of great pain in the infrascapular region at the site of injection and 0.17 gm. morphin was given hypodermically.

Oct. 19. The temperature, previously normal, now 100.6°.

Oct. 20. Temperature at 4 a. m. was 97.4°, at 8 a. m. 99.2°. From this date it has remained slightly subnormal.

The pulse seemed unaffected by the injection as was the respiration. The seroreaction examined weekly since injection shows no marked change.

Nov. 7. The patient feels well and the lesions have disappeared.

Nov. 16. The seroreaction unchanged, (+++); as all symptoms have disappeared he was discharged from the hospital and directed to return fortnightly for a blood test.

Case 4. J. L., male, aged 53, single, American, alcoholic, had several "soft chancres" on penis at about 35, no eruption seen on body following. June 30, 1906 was admitted into Lakeside Hospital with pemphigus foliaceous. Shown before the clinical meeting of the American Dermatological Association, which concurred in the diagnosis. Nothing that indicated lues was seen until the present eruption broke out over the right scapular region in June, 1910. It has gradually grown larger. He has had some pain in the right leg just above the ankle. He is poorly nourished and weighs 110 pounds. The eyes respond very slightly to light but well to accommodation. The ophthalmoscope shows a normal fundus with the exception of some sclerosis of the vessels. The internal viscera seem normal except some sclerosis in the vessel walls. The reflexes are active. On the right leg just above the ankle there is an enlargement of the tibia, which was painful at one time but is now tender only to pressure. The skiagraph shows a thickening of the periostium. On the back there is a large tubercular ereuption, measuring 23 by 30 cm. The edges are raised, tubercular and covered with thick, dark, adherent crusts, enclosing a central area of dark red, scaly patches and islets of crusts. There is no exudation and patient complains of no itching or pain. No other lesions were found on the skin or mucous membranes.

A diagnosis of late syphillis was made and the case deemed especially well adapted to test the arsenobenzol: (a) because of the neglect of all treatment, covering a period of some years, (b) on account of the extensive and striking appearance of the lesion.

Oct. 15, 1910. Seroreaction strongly positive (+++).

On Oct. 18 was given 0.45 gm. of "606" in 7.5 c.c. solution injected subcutaneously in the left infrascapular region. Excepting the pain caused by the injection at the time, which was slight, no discomfort was felt and he slept well all night. Following the injection there was a slight rise in temperature for three days. The eruption was perceptibly lighter in color on the fourth day, and has steadily continued, until at the present writing (Nov. 24) only a brownish pigmentation remains. About ten days after the injection there developed some fluctuation in the tumor, which appeared at the site of puncture.

The weekly examination of the seroreaction shows no change, remaining as at first + + +. He was discharged from the hospital Nov. 16, and requested to return fortnightly for blood tests.

Dec. 3. Patient returned for inspection. The pigmentation is fading, the tumor at site of injection is much smaller. No pain. Feels well and strong.

Seroreaction remains unchanged (+ + +).

Case 5. J. L. C., male, aged 24, married, American, complains of an ulcerated tongue and sore throat, with great difficulty in masticating and swallowing food. He contracted a "hard chancre" Dec., 1909. He sought medical advice immediately. The lesion was diagnosed syphilis and he was put on mercurial treatment, by mouth, inunctions and injections, until July 16, 1910 when the case first came under observation. At this time cachexia was marked and he was suffering greatly and unable to take food excepting in liquid or semiliquid form. It was thought mercury might have been given in excess and that he suffered from an extreme degree of ptyalism. The only other possible symptoms present were a general adenopathy and extreme pallor. His seroreaction to the Wassermann and Noguchi tests was strongly positive. Mercury was discontinued and iron given for two weeks when, no perceptible improvement occurring, he was given inunctions of Ungt. hydrarg. ciner., dram 1, daily and applications of a solution of mercury bichlorid, 1-6,000, were made to the tongue and pharnyx. Some improvement followed but the case did not respond satisfactorily, it was thought because of his profound impression with the luetic virus, or his inability to take proper and sufficient nourishment. His blood was again tested with a strong positive reaction (+ + +). All treatment was discontinued for a fortnight.

On Oct. 18, 1910 he was given 0.6 gm. "606" in 7.5 c.c. solution. Occlusion of the needle necessitated making two punctures in the infrascapular region. Some pain followed but not severe until four hours after, when he was given 0.17 gm. morphin, with relief.

Oct. 20. Two days after the injection the patient noticed an improvement in his throat while eating breakfast and said he "ate and drank more than for the past month." Temperature 98.5°.

Oct. 21. Perceptible improvement in lesions of the mouth and in general condition.

Oct. 22. Seroreaction diminished (+ +). Only slight swelling remains at site of injection, not painful, excepting when arm is raised over the head. Lesions disappearing rapidly. Patient can "eat anything" and for first time drinks water without sipping it. Lymphatic glands slightly palpable.

Oct. 27. There has been a gradual improvement in both local manifestations and general condition. Discharged from hospital.

Oct. 29. Seroreaction diminishing (+). Says he feels better than for eight or nine months.

Nov. 5. Seroreaction unchanged (+). Tongue lesions healed, throat nearly so.

Nov. 18. Blood test + —. Lesions all healed. Patient appears well.

Dec. 3. Patient continues well, seroreaction increased from a plus-minus (+ —) last week, to a double plus (+ +).

Case 6. E. S., female, aged 18, German, weight 96 pounds, well nourished but anemic, was admitted into the City Hospital Oct. 17, 1910 with a macular rash, rhagades at angles of mouth and sores on vulva. Further examination revealed a pea-sized, slightly indurated lesion with a glazed surface on the right labium, together with four or five excoriated condylomata. The macular eruption was generalized and the lesions slightly scaly. No itching complained of. The mucous membrane of the mouth patchy and the tonsils red and swollen. No discomfort in throat.

Scrapings from the indurated lesion showed *Treponema pallidum* present. Seroreaction was strongly positive (+ + +) to both the Wassermann and Noguchi tests.

The case seemed suitable for the series of experiments with Ehrlich's "606" because of the various lesions present and because it was thought possible to study the effect of the drug on the spirochaetae.

Oct. 23, 1910. She received 0.5 gm. "606" in 6 c.c. solution, injected in the infrascapular region of the left side. No pain was complained of nor has there been any pain or suppuration since.

Oct. 26. Within 48 hours after injection the surface of the moist lesions about the vulva dried and no scrapings for microscopic examination were obtained. Three days after the drug was administered, the induration had softened and the resolution of the lesions was rather rapidly taking place.

Further notes of the case show:

Oct. 29. Genitalia normal. Fissures at angles of mouth gone. Blood test remains strongly positive (+ + +). Patient feels much better than before the injection and aside from a slight discoloration where the skin was involved, appears free from the disease.

Nov. 12. Seroreaction markedly less active (+).

Nov. 23. Pharynx congested, tonsils red and swollen, lateral lymphatic glands upper third of neck indurated but not painful to pressure.

Dec. 2. A non-inflammatory fluctuating tumor, the size and shape of a tablespoon, at site of injection, moderately painful. Congestion of pharynx subsiding, tonsils less inflamed and smaller, enlargement of postauricular lymph nodes has disappeared. Patient seems in fair physical condition.

Seroreaction again strongly positive (+ + +).

It is thought the complete absorption of the drug may not have taken place.

Case 7. G. A., male, aged 23, chauffeur, Canadian, weight 120 pounds, contracted present disease June 1, 1910, which appeared two or three weeks later in the form of four or five lesions on the penis. On admission to the City Hospital Oct. 16, 1910, he presented a generalized eruption over the body, together with mucous patches in the mouth and fauces. The tonsils were large and congested. General adenopathy of the superficial lymphatic glands was marked. The skin lesions were pea to Lima bean-sized, dark red and covered with crusts and scales, with a few pustules. The process was destructive, involving the upper part of the derma. Aside from these encrusted and more destructive lesions there were small pea-sized tubercles of a dark red color, and dime-sized macules of a pinkish hue, sparsely covered with scales. These latter were less numerous than the former, although the three eruptions were interspersed and most marked on the trunk.

The prepuce was contracted, causing complete phimosis. There were three ill-defined superficial erosions on the prepuce, while deep induration could be felt by grasping the foreskin between the thumb and finger.

His general health was not good and he seemed profoundly under the influence of the syphilitic poison. The physical examination suggested a possible complication of tuberculosis. Temperature varied between 98° and 100°.

Oct. 22. The seroreaction was strongly positive (+ + +).

Oct. 23, 1910. He received 0.4 gm. of Ehrlich's "606" in 7 c.c. solution, injected subcutaneously in the left infrascapular region. Occlusion of the needle occurring, a second puncture in the same region was made. Three hours later the pain at the site of puncture became severe and he was given 0.17 gm. morphin.

Oct. 26. There was a considerable swelling at the point of injection with tenderness but little or no pain complained of. The patient said he felt well and enjoyed his food. The lesions on the prepuce have disappeared and there is a perceptible diminution in the induration underneath. The mouth and skin lesions are better.

Oct. 29. Seroreaction unchanged (+ + +), but the eruption is fading and desiccation is progressing rapidly. The temperature at 4 p. m. was 100.8°. Considerable tenderness and swelling at site of injection. The less prominent lesions of the skin have disappeared, leaving the more sparsely distributed tubercular eruption, which as previously stated is most marked on the trunk.

Nov. 14. Patch on fauces, excoriated, has appeared during the last few days. Ten c.c. yellow fluid escaped on incising the tumor at site of injection.

Nov. 25. Eruption gone, patch on fauces better, seroreaction (+ + +).

For permission to use the drug on the next case, I am indebted to Dr C. W. Wille of the U. S. Marine Hospital.

Case 8. J. D., male, aged 19, American, sailor, weight 127.5 pounds, entered the U. S. Marine Hospital Oct. 26, 1910 with an eruption over the whole body, and sore throat. His attention was first called to the disease about 20 days ago by the appearance of an eruption over the whole body. A few days later his throat became "sore." Fourteen days ago the superficial lymphatic glands of the neck became swollen. Nine days ago small "sores" appeared on the scrotum and penis. He had taken "pills" for two or three days when the eruption was first noticed, but nothing since.

On examination a polymorphous eruption was found, consisting of lentil-sized papules, macules and large plaques covered with thick, dirty-brown scales, varying in size from a bean to a five cent piece. In the latter there was seen brownish pus on removing the crusts. These latter were the most conspicuous and were elevated from 0.5 to 1 cm. above the skin level. These were interspersed with the papulomacular variety. The in-

No.	Age and Sex	Infection.	Previous Treatment.	Condition Before Injection.	Injection.
1	25 M.	Chancre, 6/10. Present eruption, 7/10.	"Pills" a week.	General, pustulosquamous, deep seated eruption. Enlarged lymph nodes. Serum +.	10-15-10, 10 c.c., infrascapular, 10 c.c. in buttock, 0.4 gm. "606." Difficulty in dissolving. Alt method.
2	44 M.	Chancre, 11/8/10.	Hg. only few days.	Throat sore. Scaly eruption. Condylomata pronounced. Sores on penis and scrotum. Lymph glands enlarged. Serum +++.	10-16-10, 8.5 c.c., 0.5 gm. "606"; infrascapular region. Traupel's method.
3	30 M.	Indefinite, pustular, scaly eruption, 6/15/10.	None.	Generalized polymorphous eruption. General enlargement of lymph nodes. Mucous membranes of mouth involved. Late secondary symptoms. Serum +++.	10-18-10, 7.5 c.c., 0.5 gm., "606," infrascapular. Traupel's method.
4	53 M.	Not known.	None.	Large tubercular lesion 23 x 30 cm., encrusted prominent border. Gumma on tibia. Serum +++.	10-18-10, 7.5 c.c., 0.45 gm., infrascapular. Traupel's method.
5	24 M.	Chancre, 12/09, sore throat followed.	Constant, Hg. rubs, injection and by mouth.	Anemic. Fauces and tongue badly ulcerated. Lymph nodes. Could not eat solid food. Serum +++.	10-18-10, 7.5 c.c., 0.6 gm., "606," infrascapular. Occlusion of needle, second puncture required. Traupel's method.
6	18 F.	Of recent origin. Chancre present, 10/17/10.	None.	Anemic. Chancre and three eroded lesions on vulva. Fissures at angles of mouth. Throat sore. Macular eruption over entire body. Lymph nodes. Spirochaetae found. Serum +++.	10-23-10, 6 c.c., 0.5 gm. "606," infrascapular. Traupel's method.
7	23 M.	Chancre, 6/10. Secondaries, 7/10.	None.	Racing chauffeur. Suggestion of tuberculosis. General eruption, suppurating. Throat sore. Lymph nodes. Poor appetite. Serum +++.	10-23-10, 6 c.c., 0.4 gm., "606," infrascapular. Needle occluded, second puncture required. Traupel's method.
8	19 M.	Secondaries, 10/10, late, rupia. Lymph nodes enlarged. Throat red and patchy.	Hg. for few days, three weeks before.	Appetite poor. Generalized rupia with macules or tubercles. Throat sore. Lymph glands enlarged. Serum +++.	10-30-10, 5 c.c., 0.5 gm. "606", infrascalpular. Traupel's method.

TREATED WITH EHRLICH'S "606."

Local Effects.	Condition After Injection.	Seroreaction.	Remarks.
Severe pain four hours, none after.	Improvement in five days. Lesions all gone in four weeks.	10-22-10 — 10-29-10 —, remained so five weeks, then returned to a full +.	Swelling in cervical lymph glands suppurated. Discharged apparently well in five weeks. Weight, 145 lbs.
Moderate local pain for few hours, none after. No suppuration.	Improvement after four days. Lesions all gone in three weeks.	10-22-10 ++ 10-29-10 +++ 11-12-10 +++	Strong man. Everything disappeared in three weeks. Lymph nodes but slightly palpable. Weight, 175 lbs.
Some local pain, 0.17 gm. morphin given. No further disturbance.	After 10 days gradual subsidence of symptoms co;mplete in four weeks.	10-22-10 +++ 10-29-10 +++ 11-5-10 +++ 11-12-10 +++	No complications, apparently well. Negro, weight 119 lbs.
Slight. Abscess formed 10 days later.	Began to fade in about five days. Nothing but pigmented area after five weeks.	10-22-10 +++ 10-29-10 +++ 11-5-10 +++ 12-3-10 +++	Very satisfactory, gradual disappearance of lesion and node. Weight, 125 lbs.
Pain severe, 0.17 gm. morphin given. No suppuration.	Thought he felt better in 12 hours, in 48 hours decidedly better. All lesions healed in 12 days.	10-22-10 ++ 10-29-10 + 11-5-10 + 11-12-10 +— 12-3-10 ++	Malignant case, most satisfactory result. Seroreaction practically negative at end of four weeks then be ++. Weight, 170 lbs.
Not severe.	Lesions on vulva began to subside in 48 hours, all gone in seven days; macular rash in two weeks. Tonsils and adjacent lymph glands about normal after four weeks.	10-29-10 +++ 11-12-10 + 12-2-10 +++	Primary sores disappeared more rapidly than other lesions. Enlargement of tonsils and lymph nodes did not augur well but later subsided. Weight, 100 lbs.
Severe for few hours, 0.17 gm. morphin given. Abscess formed in two weeks.	Improvement slow. Macules disappeared in two weeks; pustules about same time. Tubercles faintly seen after four weeks. Mucous patch appeared at three weeks.	10-29-10 +++ 11-12-10 ++ 11-25-10 +++	Not a good subject. Lesions faintly visible at five weeks. Absorption thought incomplete. To resume Hg. Weight, 124 lbs.
Severe pain, 0.17 gm. morphin given. No discomfort after eight hours. Induration at site of injection dollar-sized.	In seven days crusts began to fall, complete in three weeks and lymph nodes barely palpable.	11-5-10 — 11-12-10 + 11-12-10 +++ 11-25-10 +++	I am indebted to Dr. C. W. Wille of the U. S. Marine Hospital Service for permission to use "606" on this case and for carefully recorded observation subsequent to its use. Weight, 127.5 lbs., gained ½ lb.

volved skin was of a dark red color. The face, palms and soles were but slightly involved. The mucous membrane of the throat was patchy and the tonsils were large and congested. General adenopathy was present.

The seroreaction, on Oct. 29, was strongly positive (+++).

The eye grounds showed nothing remarkable.

He was selected because he presented an active and striking example of syphilis and on Oct. 30, 1910, he was given 0.5 gm. Ehrlich's arsenobenzol in 5 c.c. solution, injected subcutaneously in the right infrascapular region. Three hours later, the site giving considerable pain, he was given 0.17 gm. morphin. The pain lasted eight hours.

The subsequent notes are:

Oct. 31. Induration at the site of injection, the size of a silver dollar.

Nov. 2. All pain and induration gone.

Nov. 5. Seroreaction negative (—).

Nov. 6. The crusts are falling from the rupial lesions, leaving a clean, dry base somewhat reddened but with no elevation. Patient looks bright and feels better in every way. Has gained 1.5 pounds since the injection.

Nov. 11. All scales have fallen and lesions healed. Throat normal, lymphatic glands but slightly palpable.

Nov. 12. Seroreaction distinctly positive (+). The temperature chart shows but slight rise (0.5°) above normal the second day after treatment.

Nov. 19. Apparently well, sero-reaction returned to strongly positive (+++) as before the treatment.

Nov. 25. Seroreaction (+++).

The eight cases of syphilis in this series treated with Ehrlich's "606", were selected to show the disease in its various stages and in forms the most striking, without entering into syphilis of the nervous system or internal viscera. All the cases were typical and some of them markedly severe. The Wassermann and Noguchi tests were made by Drs. R. Dexter and C. L. Cummer at the Cushing Memorial Laboratory of the Western Reserve University.

No. 5, taken from private practise, did not progress well under mercury and some apprehension was entertained concerning the patient's life. In this case the drug acted more promptly and with more striking results than were observed in the others, excepting in No. 6, in which the primary lesions began to disappear within 48 hours and after a few days (four or five) could no longer be detected. What is notable in this case too, is the gradual disappearance of the seroreaction up to the end of the fourth week when it showed a very faint reaction (+—). From this time it has gradually increased to a full plus (+) on Nov. 29. No symptoms of the disease have returned.

Most of the other cases, notably as in No. 4, had not received treatment or at most for a short time only. In the primary lesions the result was more rapid than in those of long standing, as in Nos. 6 and 4.

In one case, No. 7, there was much induration, ending in suppuration at the site of injection and as the lesions were slower in disappearing and as a new lesion, thought to be syphilitic, appeared in the pharynx three weeks after its use, it was thought that all of the drug had not been absorbed. This was later verified by the escape of what appeared to be the arsenobenzol emulsion about four weeks after it had been injected. Suppuration at the site of injection also occurred in No. 4. In all, the point selected for injection was previously scrubbed with alcohol and in some painted with tincture of iodin.

Even more notable than the rapid disappearance of the various lesions was the testimony of the patients that they felt better than before receiving it. How much of this was due to psychic influence I am unable to say but as they continued to assert their complete wellbeing I think it must have a foundation in reality.

Swelling of the tonsils with induration of the adjacent lymph glands was noted in No. 6 one month after the injection; this all disappeared, however, within a fortnight or about five weeks after administering the drug. In No. 1 the lymph glands of the neck suppurated at the end of a week.

That the seroreaction does not disappear until some time after the drug is administered seems in accord with other seroreactions with which we have had a longer experience, as in the Widal test in typhoid fever, and the diazo reaction. In fact, it would seem strange if the reaction disappeared before some weeks after the administration of the drug. That it disappeared very markedly in some of the cases, then gradually returned to a strongly positive reaction seems an unfavorable feature. In No. 1 while the skin lesions showed a very active infection, the seroreaction was only mildly positive, after the injection this was reduced to a minus (—) while the reaction on Dec. 4 was stronger than before giving the arsenobenzol, +. In No. 8 the reaction was negative one week after the injection and then returned to + + and finally + + + three weeks after the drug was administered. In all, excepting No. 7, clinical manifestations of the disease had disappeared at the end of one month. What its remote effects will be, of course, we have no clinical evidence. It seems highly probable that the drug is not readily absorbed.

Bearing in mind the clinical experience of previous preparations of arsenic, and after observing the effect of arsenobenzol during a period of eight weeks, one may formulate the following recommendations concerning its present use: first, the drug seems to have a special field in malignant cases that do not do well with other forms of treatment and in which a fatal termination is imlatory patients, such as one frequently encounters in clinics, who minent; second, in the primary invasions of certain selected cases before full systemic intoxication has taken place. Again in ambufollow no systematic or protracted course of treatment. In this class of course come the *prostitueés*. If, as seems now highly possible, a single dose will destroy the *fons et origo* of syphilis or inhibit its activity, it will be more efficient than any quarantine or other system of regulation thus far devised.

The inconvenience accompanying its administration is not a serious objection. True, abscesses with fluctuation, formed in three of the series, one only was excised and the contents showed traces of the injected emulsion. The inflammation and breaking down of the lymphatic glands was noted in one case only. This was thought to be due to the systemic influence of the drug.

The possible disadvantages to be borne in mind are: the uncertainty as to the final outcome of the disease, and the possible dangers that may occur from its use, such as have been known from other chemical forms of arsenic.

Technic: That of Lesser* is the simplest and seems the best thus far devised. In most of the cases herein reported Traupel's technic† was followed.

Finally when the drug becomes commercialized, it is doubtful how much good it will do, or whether the good will be greater than the harm. Thus far cases have been selected with great care and tested by the Wassermann reaction preceding its administration, and it seems at this psychic moment almost heresy to even offer a word of warning, but when it comes in more general use and may be given to anybody suspected of being infected with syphilis, it will be indeed strange if, in the use of a drug so potent, serious complications do not ensue.

1935 Euclid Ave.

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*Jour. of the A. M. A., Oct. 22, 1910, p. 1470.

†London Lancet, Sept. 24, 1910.

A Method of Surgical Approach to the Lower Ureter.

By FREDERICK C. HERRICK, M. D.,
Assistant Surgeon Charity Hospital; Lecturer in Surgery, Medical Department Western Reserve University.

The ureter, especially at and just above its entrance into the bladder, is considered from a surgical standpoint to be rather difficult of access. This is shown by the varied routes which have been used in reaching it, their very number and the difference in surgical principles involved being proof that none is entirely satisfactory. From the transperitoneal route used in Israel's clinic as described by Block,[1] to the extraction of calculi in the lower ureter through a rectal incision by Ceci, there seems to be little adaptation of the operator's method to the anatomy of the part and little effort to appropriate the course of least injury. The writer found it of value to find for himself more definite methods than those in common use. Surgery is an art of accuracy and definiteness, and it is poor indeed if these are not accomplished, casting uncertainty over not only the operative case in hand but the safety for those to come. The following procedure has proved satisfactory to me in several cases, one of which was a man of 180 lbs. weight and of stocky build with a pelvis difficult to reach.

It will be necessary to recall to mind a few points in the anatomy of the part. The external oblique muscle, slightly below the level of the anterior superior iliac spines, becomes tendinous and its fibers form an angle of 45° with the median line. The internal oblique fibers at this point are directly transverse and parallel with those of the transversalis muscle, forming a right angle with the median line. The iliohypogastric and twelfth dorsal nerves pass obliquely, parallel with the fibers of the external oblique muscle, from above the crest of the ilium and supply the oblique muscles and the rectus. The deep epigastric artery passes from its origin in the external iliac around the inner border of the internal ring, between the peritoneum and transversalis fascia and enters the posterior rectus sheath below a point where a line drawn from the umbilicus to the femoral ring crosses the edge of the rectus. In gaining access to the ureter all of these structures should be held intact in order to accomplish the best surgical results.

The following incisions have been used. First, parallel to and one inch above Poupart's ligament continuous with that for the kidney if necessary and called by Morris[2] the lumbo-ilio-inguinal incision, carried through all structures without muscle splitting. This incision is entirely unnecessary when we are able precisely to locate a stone with the x-ray or catheter. This line has been varied by Gibson[3] who makes it more convex downward, starting over the pubis, passing horizontally, cutting the rectus, then curving sharply upward to within the anterior superior spine. Kelly[4] improves on this to the extent of using the McBurney incision when he wishes to reach the ureter above the pelvic brim, and one through the linea semilunaris when the pelvic portion of the ureter is to be approached, cutting the nerve supply to the rectus. (Fig. 1).

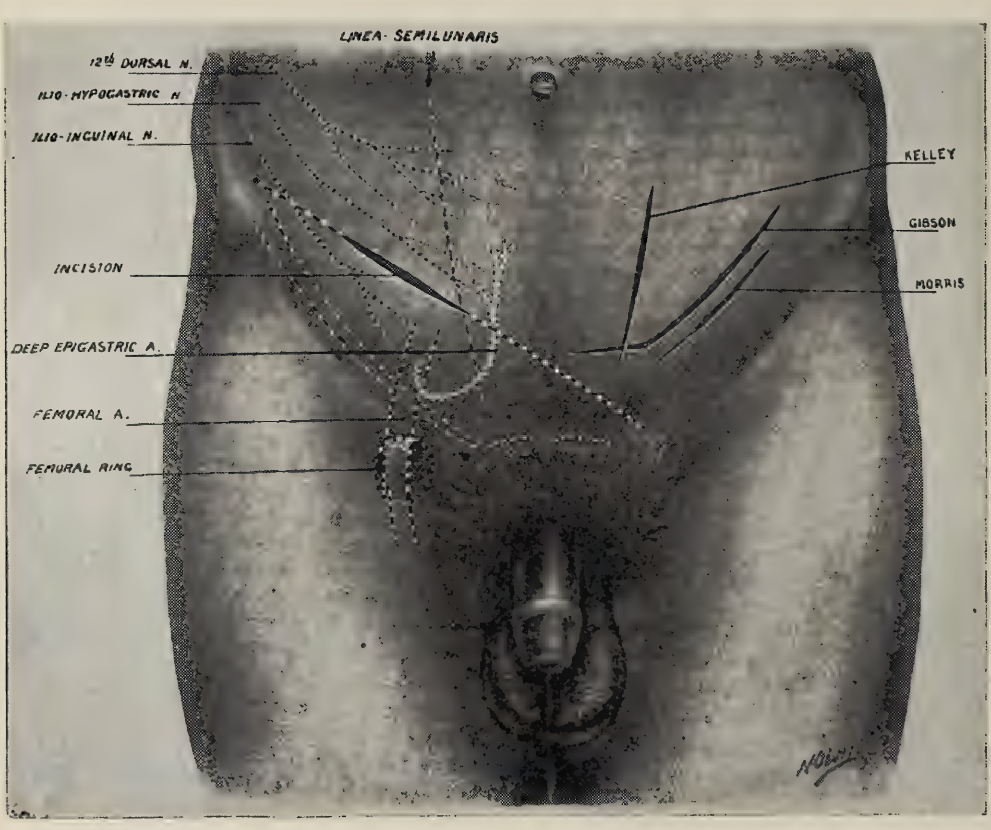

FIG. 1

Various other routes have been used, e. g., through a rectal incision or through a vaginal[5] one, both of which must be condemned under all circumstances since a ureterorectal fistula or infection in the ureter would be almost certain. Delbet[6] made a Kraske incision parallel to the coccyx, then an L shaped arm, divided the insertion of the gluteus maximus, the sacrosciatic ligament, and partly the pyriformis muscle. Cabet advised this though I fail to see why. The transperitoneal operation, although done by many operators, even today, seems entirely unjustified since it adds the risk of intraperitoneal infection.

We know that any incision through the abdominal wall which divides the muscular nerve supply or does not take advantage of the direction of the muscle fibers where this is possible, is not the best surgery: moreover, any vertical incision must cut the nerve supply of the abdominal muscles, especially that of the rectus. The transverse incision must cut not only the rectus muscle but the deep epigastric artery and none of these incisions is described as being intermuscular. Hernia and relaxed abdominal muscles with resulting visceral ptoses are always to be guarded against, hence I devised and used in three cases the following plan with entire success.

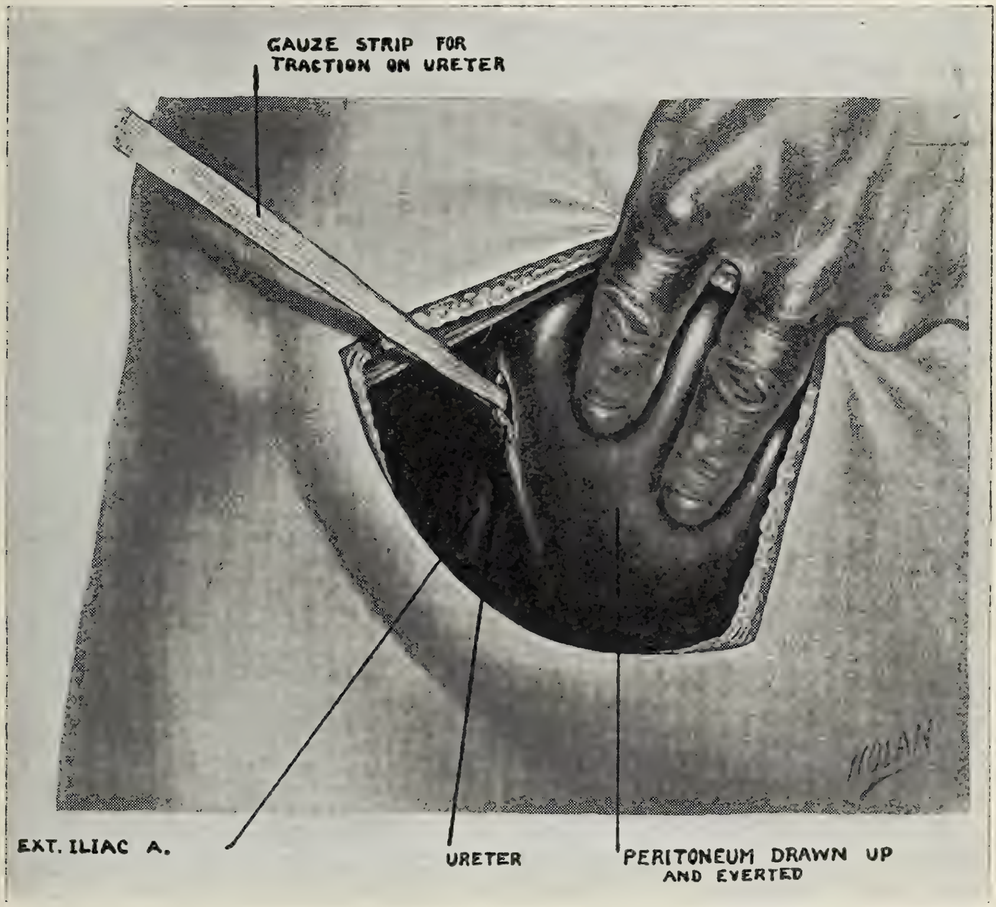
GAUZE STRIP FOR TRACTION ON URETER
EXT. ILIAC A.
URETER
PERITONEUM DRAWN UP AND EVERTED

FIG. 2

The incision is made on an imaginary line drawn from the inner lip of the anterior superior spine to a point above the opposite spine of the pubis, say the external abdominal ring, starting 1½ to 2 inches from the anterior superior spine and extending

3 to 3½ inches to the edge of the rectus muscle. This strikes the edge of the rectus 1 to 1½ inches above the entrance into it of the deep epigastric artery. (Fig. 2). The tendinous external oblique is split in the incision's line; the internal oblique and transversalis are likewise split parallel to their fibers and parallel to the nerve trunks which lie between them. The peritoneum is dissected up with the fingers from the side and floor of the pelvis. A broad retractor, placed at the lower end of the incision, gives good access to the deep pelvis. In finding the ureter, the finger is carried to the bifurcation of the common iliac and then turned up against the under surface of the peritoneum where, closely adherent to the peritoneum and covered by some of its reflected fibres, will be felt the ureter. By cutting these fibers the ureter is separated from the peritoneum for an inch or two, a strip of gauze is passed behind it and gentle traction made when the ureter will stand out as a ridge extending to the base of the bladder.

The ordinary impression, when searching for the ureter, is that it is in the floor of the pelvis: this is misleading for it is in the roof of the retroperitoneal pelvic space, closely adherent to the under surface of the peritoneum. It is carried up with the peritoneum and can be readily overlooked if this fact is not kept in mind. The Trendelenburg position will help greatly at this point.

The stone having been removed or other operative work completed the ureter is closed by a continuous plain catgut stitch. The muscles are coapted in separate layers by a few chromic catgut stitches.

In this manner I have, without difficulty, removed stones impacted just above the bladder but inaccessible through the cystoscope and feel that since all structures are returned to their normal state this route is an ideal one.

REFERENCES.

(1) Block: Zeitsch. f. Urologie. Bd. 3, 1909, S. 753.

(2) Henry Morris: Surgical Diseases of the Kidney and Ureter. Vol. 2, p. 523.

(3) Gibson: Amer. Jour. of the Med. Sci. Vol. 139, p. 65.

(4) Kelly and Noble: Vol. 2, p. 741.

(5) Ceci and Delbet, quoted by H. Morris: Vol. 2, p. 525.

112 Lennox Bldg.

A Method of Preparing Lantern Slides in Color.

By ARMENOHIE H. TASHJIAN, Cleveland.

Colored lantern slides, commonly used by the lecturer to illustrate his paper, are positive transparencies obtained by means of photography and retouched with Japanese, water, or other transparent colors. The black and white background, however, makes it impossible to bring out the finer details and shadings of an object. Such a lantern slide is therefore of little use for illustrations of operations, pathological specimens, or microscopic sections.

Extensive experiments were undertaken by me in the laboratory of Drs Bunts, Crile and Lower to overcome this difficulty and to secure a lantern slide which would reproduce in natural colors the finer details and shadings of pathological specimens, operations or microscopic sections. As the results have been most satisfactory, I was asked to describe the technic of preparing such a slide.

It is well known that the polished surface of glass, being non-absorbent, is a most undesirable painting surface. This difficulty may be overcome by a very thin and transparent gelatin coating. It may be prepared by the artist, or lantern slide plates may be used. The latter, as obtained in the market, are coated with an emulsion of gelatin and silver. The silver may be dissolved by placing the plate in a 10% solution of hyposulphite of soda until it becomes absolutely transparent. This requires from 10 to 15 minutes. A plate is thus obtained covered with a thin coat of gelatin which must be washed in *cold running* water for an hour in order to remove the last trace of hyposulphite of soda. If a dry surface is required immediately, it will be advisable to dip the plate in 90% alcohol, which absorbs the moisture of the gelatin and thus hastens the drying process. The painting surface is now ready.

Painting pathological specimens: Sketch the object on a piece of paper; lay the glass upon it; trace the lines with a very fine sable brush in a color which predominates in the object. Now proceed with the painting, using moist water colors. If the surface is not of equal tint, moisten the painting by breathing on the glass; go over it lightly with a clean, flat, camel's hair brush to smooth and blend all inequalities. When the finished painting is dry, cover it with a plain glass cover and bind it with Montauk binding strips.

Painting microscopic sections: To secure the exact tint of the section, a solution identical with that used in the staining process may be used instead of water colors. For example, if a section of brain tissue is stained by the Nissl method, a soapy solution of methylen blue and erythrosine will produce the exact tint. Use a camera lucida to obtain the exact size of the object and draw the outline first on a piece of paper; then copy it on the slide as already described.

Diagramatic drawings: For line drawings, harden the gelatin coating by dipping the slide in 40% formaldehyd for 10 minutes. This will prevent the pen from scratching off the gelatin from the glass. A stereopticon effect might be produced by using several slides together, each with a different layer of the painting.

I regret that the cuts of such finished slides could not be herewith reproduced as it is impossible to make satisfactory negatives from glass painting.

222 Osborn Bldg.

Review of the Progress in Surgery.

Conducted by CHAS. E. BRIGGS, M. D., Cleveland.

1. A New Operation for Prolapse of the Rectum—Mummery.
2. Treatment of Fractures Implicating Joints—Russell.
3. Fracture of the Clavicle, Showing a Very Satisfactory Posterior Figure-of-Eight Dressing—Brimhall.
4. Report of a Case of Resection of Dorsal Spinal Nerve Roots for Gastric Crises of Tabes—Thomas and Nichols.
5. Treatment of Hemorrhage of the Spleen—Sheldon.
6. The Use of Silver Wire in Opening the Kidney—Cullen and Derge.

A NEW OPERATION FOR PROLAPSE OF THE RECTUM.

By J. P. L. Mummery, *The Lancet,* March 5, 1910, Vol. CLXXVIII, p. 641.

Though not definitely so stated, the writer appears to limit the method described to prolapse of the rectum in adults, a condition which is ordinarily considered very difficult to cure. In the various operations devised it has been attempted to suspend the bowel from above, inside the abdomen, colopexy; or to fix the rectum into the hollow of the sacrum, proctopexy. The latter method has been assayed in a number of ways by suture, but it has been impossible to either fix successfully or hold the rectum permanently in the concavity of the sacrum. To overcome the difficulties and the insufficiency of these various suture methods, the writer describes a method for which he claims originality, and has used it successfully in four cases, three of which, in adults, he describes, the interval since operation being four years in two and three years in one. The operation consists of making a transverse incision about five centimeters long, midway between the anus and coccyx, dividing the coccygeal attachment of the external sphincter, opening the posterior rectal space, and proceeding by blunt dissection with the finger up into the hollow of the sacrum a distance depending on the degree of the prolapse, and a little distance on either side of the bowel. This space is kept open by a thin wick of gauze which is replaced daily after the third day, thus permitting closure by granulation tissue, the resulting scar formation holding the rectum in place with exactness, certainty and permanency. The rectum is lightly packed with gauze to promote cleanliness, and the bowels are moved by enema on the third day, the patient is kept in bed about four weeks, the wound usually healing in three weeks. Dividing the coccygeal end of the external sphincter allows the anus to go forward a little, increasing the sacral angle, and tends to prevent prolapse. To recommend the method is its simplicity, safety in not opening the peritoneum, lack of injury to important structures, restoration of the normal position of the bowl, its efficiency and permanency.

TREATMENT OF FRACTURES IMPLICATING JOINTS.

By R. Hamilton Russell, *Australian Medical Journal,* June 20, 1910, Vol. 15, No. 6, pp. 265-273.

The statements made in this article are designed to apply solely to fractures directly involving joints, but much that is said applies more or less directly to fractures near joints. The points emphasized are by no means new, but the emphasis given them is somewhat new in view of the persistent trend toward early motion in the treatment of fractures involving joints, culminating in the last few years in the exaggerated development of this principle by Lucas-Championnière into the method of mobilization and massage from the start. Russell's convictions are based on a long experience in fractures at the Melbourne Children's Hospital and the Alfred Hospital of Melbourne.

For many years it has been the custom to accept the text-book statement that immobilization of a sound joint results in loss of function. Whether or not this is strictly true, or if so, to what extent the impairment is due to changes inside the joint, such as adhesions, or outside the joint, such as muscular contraction and fixture, appear to be matters of opinion rather than demonstrated knowledge. Upon this point Russell is positive and insistent; "Immobilization never yet stiffened a joint." On the other hand, in case of fracture "mobilization has permanently impaired the mobility of very many joints indeed." The most frequent cause of impaired joint function in these cases is exuberant callus formation; this is induced and aggravated by early passive motion, and is the most successfully controlled by immobilization. The effect on the joint of early passive motion associated with any degree of discomfort is increased by the active muscular resistance of the patient put forth in an effort to prevent motion, producing a degree of grinding irritation on the joint surface which is not present in voluntary, painless motion at a later period, when there is no muscular resistance to overcome. This distinction seems logical and important. The involuntary muscular resistance to early passive motion might well be compared to the protecting abdominal resistance seen in acute peritoneal irritation. Sometimes the impairment of motion is strictly outside of the joint, due to cicatricial tissue involving the soft parts, muscles, tendons, or ligaments; in such cases complete function is restored in five to six months if left alone, but cannot be hurried by early forced passive motion; indeed, the conditions will be aggravated.

On this ground, early, forced, painful, aggravating, grinding passive motion against strong muscular resistance is gravely disadvantageous, whether instituted at once, as by the followers of Lucas-Championnière, or after a short period of immobilization as is so commonly practised at the present time. Instead of this, it is urged to preserve immobility for three to five weeks to allow adequate union, then allow and encourage active motion within the limits of comfort, and omit forced passive motion entirely. Proper reduction and adequately retained position of the fragments is, of course, an accepted necessity in any form of treatment. Careful massage without the aggravation of motion of the fragments may not be harmful, but is not essential. To make a few striking quotations: "In fractures involving joints the most potent cause is the so-called passive movement performed by the surgeon. Immobilization is never a cause of stiffness." "When great stiffness is present, in spite of the surgeon's efforts to increase the mobility by passive movement, such stiffness will persist so long as the surgeon persists." "When the surgeon abandons the case in despair, improvement will at once commence." Our own personal experience confirms to a very considerable degree at least the contention of Russell. No one can recall the distressing resistance to forced passive motion without some sense of a real injury inflicted.

FRACTURE OF THE CLAVICLE, SHOWING A VERY SATISFACTORY POSTERIOR FIGURE-OF-EIGHT DRESSING.

By John B. Brimhall, St. Paul, Minn., *Journal of the Minnesota State Medical Association and the Northwestern Lancet,* October 15, 1910, Vol. XXX, No. 20, p. 427.

What appears to be a simple, efficient, and retentive dressing for fracture of the clavicle is here described, meeting satisfactorily two of the classical requirements, upward and backward placement of the shoulder, and also preserving, perhaps, more outward extension than is afforded by any other dressing. In the sitting or standing position sheet wadding in sufficiently protecting amounts is placed over both scapulae, carried over the top, outer side, and front of the shoulders, and brought down through the axillae to the back. Over this is placed a plaster-of-Paris mould, made in the form of a low, broad letter X, the lower arms of which are carried well down over the scapulae, rather lower on the side of the injury, while the upper arms come over the top and outer side of the shoulders, and well down on the front. The mould is constructed by recurrent folds of an ordinary plaster bandage about three inches wide, and about every fourth time the front of the shoulders is reached the bandage is carried through the axillae to the back. It is helpful to have the shoulders held backward, upward, and outward by an assistant, but this is not essential as the first turns through the axillae will maintain the position. The arms are brought to the side and care taken that the position of the shoulder is satisfactory during the setting of the plaster. Free use of the arms is allowed, and the parts are held sufficiently immovable to preserve position and avoid the discomfort of movement and jar, in marked contrast to the rapidly loosening Velpeau dressing usually applied. Illustrations are given.

REPORT OF A CASE OF RESECTION OF DORSAL SPINAL NERVE ROOTS FOR GASTRIC CRISES OF TABES.

By John J. Thomas and E. H. Nichols. *Journal of Nervous and Mental Disease,* Oct., 1910, Vol. 37, No. 10, p. 593.

The feasibility of division of the posterior spinal roots for the relief of severe gastric crises in tabes dorsalis has received considerable rather promising attention in the last two years, resulting in the publication of a number of articles in the last few months dealing with the question theoretically and giving early reports of perhaps a dozen cases here and abroad, reports which it must be admitted are altogether too recent to permit of final judgment, but which appear to furnish a degree of encouragement which the inefficiency of other methods of treatment only helps to emphasize. Shortly after the article here noted was read at the last meeting of the American Neurological Association, A. Gotzl, (*Centralblatt fur die Grenzgebiete der Medizin und Chirurgie,* June 18, 1910, B. 13, Nr. 10, p. 369) reviewed the literature briefly, reported one case operated on by Moszkowicz, and cited six European cases.

The relation of the so-called gastric crises to tabes was firmly established by Charcot in 1868. Because of the presence of these associated symptoms in some cases before other evidences of the underlying disease appear, the diagnosis has often been mistaken, leading not infrequently to abdominal operations of various kinds. One very striking instance of this was published as late as 1908, that of a patient who had undergone four such operations. A very admirable description is given of the three main classes of symptoms, pain, vomiting, and general changes, with the details of the clinical findings, such as stomach analysis, followed by references to the most frequently observed pathology and the best established theories in explanation of the symptoms.

The medical treatment has been varied and largely ineffectual. But little has been attempted in a surgical way except under the misconception of a wrong diagnosis. In 1907 Dubar and Leroy performed gastro-enterostomy on two cases, one of which was entirely relieved of symptoms for at least three years. In 1906 Vallas and Cotte stretched the solar plexus with entire relief at the time of the report, only two months after, however. The first resection of the dorsal spinal roots for this condition was done by Foerster, published in 1909, the seventh to the tenth nerves being cut; the patient was markedly improved and gaining in weight. In the same year Friedrich divided the seventh to the ninth roots with relief for three months, when the report was made.

The case reported by Thomas and Nichols was of a man 30 years old, with well-marked gastric crises for eight years, for which he had received hospital medical treatment on several occasion; the abdomen had also been opened on one occasion without the discovery of related lesions or relief from pain. On March 3, 1910, Nichols removed the arches of the fourth to the seventh thoracic vertebrae inclusive, exposed the cord through the dura, and divided the seventh to the tenth posterior thoracic roots inclusive. The technic is given in detail. At the time of the report about two months later, there had been marked improvement with complete absence of epigastric pain, but the result was complicated somewhat by the persistence of the morphin habit previously acquired, and for this reason also a final judgment could not be given. On account of the severity of the operation and the uncertainty attached to such recent results, it should be considered only in severe cases and under favorable conditions. It may be urged that the operation is useless as the stomach may be influenced by the disease through the vagus, but the results thus far produced seem to indicate that at least some of the cases are favorably affected. The operation has been done several other times in this country.

THE TREATMENT OF HEMORRHAGE OF THE SPLEEN.

By J. G. Sheldon, *American Journal of the Medical Sciences,* April, 1910, Vol. 139, No. 4, p. 581.

The difficulties of handling splenic hemorrhage are well known. A series of 168 cases collected by Berger showed a mortality of 86.3% in 24 hours; doubtless other influences aside from splenic hemorrhage contributed to this high mortality, but at best, the figures are startling. The cases in this series were treated in various ways; splenectomy, a severe operation giving a mortality of about 50% in 24 hours, and depriving the individual of an organ; by suture, which is very frequently inefficient; by crushing the edges of the wound, a method rarely applicable; ligation of the vessels at the hilum, practically always resulting in necrosis, even when the omentum is brought to the organ to give new circulation; packing, the cautery, steam and hot air have been used with very uncertain results; resection of a part of the organ has sometimes been successful.

The suggestion made by Sheldon was successfully worked out through a series of animal experiments, but had not been tried in actual practise. The principle has long been used under other conditions, however, and seems rational and worthy of trial. It consists of placing flexible rubber covered clamps on the pedicle with just enough pressure to prevent bleeding without injuring the vessels. At the end of four hours the clamps are gently loosened, but left in place; if no hemorrhage follows, as shown by the appearance of blood in the wound, they are removed; if there is still bleeding, they are again tightened for another three or four hours. No packing or sutures are placed in the splenic wound, as it was found this resulted in extensive thrombosis, frequently back to the site of the clamp, and as the circulation could not reestablish itself, necrosis followed. The length of time required before loosening the clamps was worked out in the dog experiments, and may be found to differ in human beings. Histological examinations made from 12 hours to three weeks later showed complete restoration of the circulation and entire absence of injury to even the intima of the vessels. Thrombosis extended only a short distance from the injury, the wound being at first covered with plastic material, replaced later by granulation tissue, the splenic structure being normal a short distance from the line of healing. No ill effects were ever seen after leaving the clamps on for six hours, but 10 hour pressure prevented reestablishment of the circulation. The method did not appear to be applicable if the injury occurred near the hilum. owing, probably, to excessive injury to the blood supply on account of insufficient anastomosis at this point; necrosis followed in these cases, and splenectomy seemed primarily indicated.

THE USE OF SILVER WIRE IN OPENING THE KIDNEY.

By Ernest K. Cullen and Herman F. Derge, *Johns Hopkins Hospital Bulletin,* Nov., 1909, Vol. XX, No. 224, p. 350.

In November, 1909, Cullen and Derge made a preliminary report on some animal experiments undertaken to elaborate a method of opening the kidney which would be associated with less loss of blood than almost invariably occurs in the ordinary knife incision through the cortex, and at the same time to reduce the tendency to infarct formation. Based on the work of Brödel in 1901, who demonstrated the terminal branching of the kidney vessels on either side of an avascular longitudinal line, it was thought that these branches might be separated with less injury by working from the pelvis to the cortex, whether in the longitudinal or transverse direction; this was found to be particularly true in the longitudinal incision, the knife being introduced into the pelvis at one pole of the organ and allowed to cut its way out to the cortex. It was also found that still less vascular injury was done if a silver wire was threaded through the hillum of the kidney and brought out to the cortex by a sawing motion, the amount of blood lost being much less, perhaps one-eighth of that lost when a knife was similarly used, and vastly less than when an incision was made through the cortex from without inward. To those familiar with the vascular distribution as demonstrated by Brödel, the reason for this is at once clear. In the animal experiments number three silver wire was threaded on a straight round needle and passed completely through the kidney from pole to pole, including the pelvis; in several nephrotomies in human beings a curved round needle was found more advantageous, only a part of the kidney being opened at a time. It was found to be of advantage to cut the capsule between the points of entrance and exit of the needle, also firm counterpressure on the organ was desirable to prevent too sudden and violent traction which might tear the vessels rather than separate their branches. If the needle is carefully introduced it was claimed that no vessels of any size need be punctured, as increased resistence was appreciable when such vessels were encountered, and the needle could be deflected a little to one side. The advantages of the method were further emphasized by E. H. Richardson in the *Bulletin* of March, 1910, Vol. 21, No. 228, p. 80.

The method was employed with very gratifying success in a recent case of our own. A small section of the kidney was first opened by introducing a wire into the pelvis and out again, and later enlarged by taking an additional bite from within outward. The bleeding was scarcely appreciable, the least we had ever seen in a nephrotomy, and closure required only superficial sutures in the cortex. This latter point was also emphasized in the original publication, as it decreases the likelihood of infarcts which may follow the use of mattress sutures through the substance of the kidney, usually required in the cutting operation from without inward.

The Cleveland Medical Journal

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EDITORIAL

The Western Reserve Conference on the Care of Neglected and Dependent Children.

The needs of the dependent, defective and delinquent child have certainly been made plain to all those who were moved to attend the Western Reserve Conference held in Cleveland, November 17, 18 and 19. It must be of untold benefit to the Western Reserve and to Cleveland to have all of its child-caring agencies meet upon this common ground and get into such close and sympathetic touch that there can be a free and informal discussion of all the practical means of caring for the child and an equally free criticism of much now in practise that is not helpful.

The scope of the Conference can not be pictured in a limited space presenting as it did all methods of caring for dependent children; showing present day standards for good institutions, the cottage versus the congregate system of housing; showing how life in an institution may most closely approximate life in a normal family, and therefore to what extent application to the institution may be limited; and, most important of all, showing how dependent children may be trained to avoid as many as possible of the destructive forces which produced their dependency.

It is sufficient to say that the findings of this conference in the main show that in constructive work with families of dependent children, assistance that will keep the child if possible in its home, assistance that will help the parent to support and care for the child is best. That it should be the aim of every child-caring organization to so educate the families of dependent children, that the organization may go out of business for very lack of need, in other words, the organization should be operated for the best interests of the child and not for that of the Board of Directors and the Institution.

Starting out as of the very first importance in this great campaign for the education of the family to the needs of the dependent child, is the value of preventive medicine, home sanitation, public cleanliness. We have then this vision of medicine, not as a commercial venture, not primarily as a learned profession with a lot of dignity attached, but as a profession of service united with other allied professions to better the condition of the unfortunate.

This great problem of Social Service has created the need for the trained social worker, a student of that work which Dr Cabot dignifies by the name of Social Psychology and which he defines in his book, "Social Service and the Art of Healing," as "the study of character under adversity and of the influences that mold it for good and ill." And the community must and will require the same standard of excellence from the social or charity worker that it does of the physician or the lawyer. The interrelation of physical and mental causes of dependency are such that the very closest team work must exist between doctor and social worker, between social worker and educator and in no case can there be proper and adequate assistance without careful diagnosis both of disease of the body and sociological disease.

William H. Pear, in his paper entitled "The Full Measure of Responsibility" points out in admirable fashion how the case of the dependent child should be approached by the physician, social worker, or indeed any good citizen:

> "During the past twenty years we have focussed our attention on the question how best to care for the children. The very important phase of this work is the need of what may be called case diagnosis and its attendant responsibilities. Here is an obligation not to be shirked. It rests upon every agency at the moment when the individual child seeks admission to its care, for there is always a chance that there may be no other human agency to intervene between that child and want or even calamity. The resposibility at this point is yours and you must face it. These applicants are seldom far sighted. They are in distress, and they do not know what they really need, but they may reach no other in season, except with your assistance. One of two things, therefore, must be done; you must either deal with the situation yourself or put the applicants in touch with the best service that your community affords. In any case there can be no such thing as proper and adequate assistance without careful diagnosis of the need; and if we regard the occasion as one in which we have merely to decide whether or not to receive the child into our institution, we have not struck the pace which present day standards require."

The agencies in Cleveland are many to help in this medical and sociological education; there comes to mind at once, the Visiting Nurse Association, the Babies' Dispensary and Hospital, the several free hospital dispensaries, the district and school physicians, the Humane Society, and all of the admirable nurseries and housing institutions for children, doing a great work today. But the new aim is to have them so affiliated that there will be no overlapping of work, no working at cross purposes, and much economy of time and money.

To this end it was the recommendation of the Committee on Findings that there be established The Western Reserve Conference on Child Welfare, composed of representatives from every child-caring agency in and about Cleveland. This organization will act as a charities clearing house and so provide for more adequate cooperation between child-caring agencies.

There are but five of our large cities in which the children's aid societies have organized special departments or bureaus for this work of case diagnosis. In Boston, Philadelphia, Baltimore, Brooklyn and Chicago such a clearing house registers, after careful examination, the need of every dependent, defective or delinquent child brought to its attention and then gives the case to the agency best able to care for its individual needs.

Having in mind the excellent work done, especially in Boston and Philadelphia, of which we heard so much during the Conference, the Cleveland organization has the great assistance, at the start, of the experience of these workers and doubtless will adopt many of their admirable methods of registration and of investigating and supervising the work done for dependent children.

R. F. S.

Antituberculosis Work in Cleveland.

The year 1910 has witnessed a great advance in antituberculosis work in Cleveland. New interest is being awakened and much new work is being undertaken. There seems to be developing a spirit of cooperation never before present, but which is vitally important in the solution of this problem. The approval by the people, at a recent election, of bonds for a new tuberculosis sanatorium and the establishment of a division of tuberculosis in the Health Department are the two most important accomplishments of the year.

As the result of an exhaustive report to Mayor Baehr and to the City Council, on local tuberculosis conditions and needs, prepared by a special committee, appointed by the Antituberculosis League and endorsed by the Academy of Medicine and by the Chamber of Commerce, an increase of $7000, was allowed on the budget of the Health Department in July, 1910.

In accordance with the recommendations of this report the Board of Health has created a new department, which will have oversight of the development of all work looking toward the relief and control of tuberculosis. The work up to the present time has consisted mainly in the establishment of dispensaries. After a careful study of local conditions and methods employed in other cities, it was decided to divide the city into districts and locate a dispensary in each district, believing that in this way cases could be handled with less discomfort to the patients and that quicker and better results could be obtained than if one central dispensary were operated.

Accordingly a dispensary has been opened at the eighth precinct police station, corner Detroit Ave. and West 29th St., which will care for all cases on the West Side. Another has been opened in the Haymarket district, at the Central Friendly Inn, 502 Central Ave., which will care for all cases in the district bounded by Euclid Ave., East 55th St., Kingsbury Run and the river. The Antituberculosis League Dispensary, located at the corner of East Ninth St. and St. Clair Ave., will care for all cases in the remaining area of the city, until it is possible to open a dispensary in Newburg, when the League Dispensary will confine its work to the district north of Euclid Ave. Ultimately this dispensary will also be taken over by the Department of Health. The dispensary hours are Monday, Wednesday, Friday and Saturday, 1 to 2:30 p. m. After January 1, 1911, evening clinics will be held every Thursday evening, 6:30 to 7:30 p. m.

A corps of ten nurses especially trained in the work devote their time to the visitation and instruction of cases in the homes. Careful investigation of home conditions is made with a view to eliminating all cases from dispensary treatment who are or can afford to be under the care and treatment of a private physician.

Within a short time the Department will be in position to furnish all cases reported to the Board of Health with literature, paper napkins, sputum cups, etc., and a nurse will visit the case in the home in order to cooperate in any way the attending physician may suggest, *providing the physician wishes it.*

The department is desirous of obtaining, as quickly as possible a complete census of all cases of tuberculosis in the city. In order to do this blanks, to be filled out and returned, will soon be mailed to each physician and institution. The information thus furnished will be regarded as strictly confidential and will be used only for statistical purposes.

It is a matter for congratulation that the Board of Health has undertaken the development of this work. Within a year Cleveland will be possessed of a splendid new tuberculosis sanatorium and hospital, caring for 250 patients. In order to make the work of this institution effective it is of paramount importance that there be within the city an organized dispensary system with its nurses and physicians who will be responsible for the thorough eradication of the trail of infection left by a tuberculosis case; who will aid in the finding and supervision of new cases amongst the poor; and who will, by reason of home investigation, be enabled to recommend and to enlist aid and relief so often necessary.

The possibilities for development of this work are tremendous. In one way or another it should be made to touch every phase of public and private life of each individual in Cleveland. But in order to insure its success there must be cooperation on all sides.

The Associated Charities, the Visiting Nurse Association, settlements, employers of labor, and all must work together. It lies within the power of the physician, however, to be of the greatest service of all. The physician is constantly in a position to spread knowledge concerning the disease: through him the indigent cases are referred to the dispensaries and private cases are reported to the Board of Health.

It must be remembered that tuberculosis is included among the reportable diseases, as provided by the regulations of the Board of Health. Cleveland is one of the few cities in the country which is undertaking this work in a big comprehensive manner—let us all work for its successful outcome.

Something to Read.

The title does not refer to what appears beneath it, but to something else better written by others.

The ultimate aim of the medical art is the prevention of disease. As compared with the eradication of disease the alleviation of illness through treatment is of relatively minor importance. In its broadest scope medicine is not merely practically applied therapeutics. It deals, rather, with the life histories of living things and with the interrelationships of animate things with each other—more particularly with those relations of lower plant and animal forms of life to man and the higher animals which may influence the health and well being of the latter. In this sense medicine is a part of biology. To decrease the incidence of the preventable diseases there is required upon the part of the populace a much greater familiarity with the nature and the causes of such diseases than exists at present. In the education of the laity the physician must play the leading part—he must be guide and teacher. He can do even more in his everyday intercourse with people than through those organized endeavors which are already part of his professional life. The best type of modern medical education presupposes a liberal preliminary training. All the details of this training need not have a direct utilitarian application upon later problems. More important than this is the broadening of the intellect and the instilling of a certain degree of that which is termed culture. By training and education the physician is fitted to be the intellectual leader of his community—and the more humble the latter the more valuable does broad-minded leadership upon the part of the doctor become.

In order that the physician may be a preceptor of the people he requires more than his technical training. He needs a certain amount of enthusiasm and of altruism and at least a superficial knowledge of many matters not directly concerned with the healing of the halt. The best teacher of elementals is not always he who is most deeply versed in his subject. In the imparting of information youthfulness of spirit and of ideals may be as valuable as profundity—breadth of view and generalization may be as helpful as intensive specialization. One of the unfortunate things about medicine is the tendency toward narrowness which occurs after the years of active preparation are over. The field is so extensive that a single lifetime does not suffice to acquaint one with all that may be growing therein. The laboratory worker finds it difficult to digest even the literature relating to his more immediate problems—upon other subjects, even those closely related to his own, he may become less and less well informed. The busy practitioner is fortunate if he has time for more than the merest abstracts of clinical literature—and if he has time for more the constant drain upon his sympathies saps strength and energy. The family doctor of the old school was apt to become constantly more and more valuable to his neighbors. His work trained him in the humanities and his relationships with people could become so intimate that his advice was sought upon all sorts of non-medical matters. But medical knowledge is constantly advancing and the physician of today needs to be much more widely informed than was the case thirty or forty years ago. This is particularly true of those facts which concern the etiology of disease. These are the facts upon which the prevention of diseases largely rests—they are the ones with which the physician must be acquainted if he is to subserve his greatest function, if he is to be the leader and teacher of his community in general rather than the healer of some of its individual members.

Fortunately, the populace is coming, more and more, to demand information upon health problems. That portion of the lay press, which thinks of itself as helping along the general "uplift" tendency, seems to be anxious to disseminate information which tends toward the conservation of human health and energy. Most of that which appears cannot be profound. To be valuable it need not be more than superficial. As a matter of fact, it is capable of instilling knowledge not only into the laity but also into those physicians who have been drawn away from basic scientific facts by the demands of practise. This lay medical literature which is being developed does not absolve the physician from his duties as teacher—rather, it behooves him to use so much as is new to him because of inability to consult original sources and to pass it on to those without scientific training.

Among the many disquisitions which have appeared as magazine articles or as easily read volumes two recent ones, both dealing with biological problems and deserving consideration from the physician, are "Insects and Disease," by R. W. Doane, and "Biology, *General and Medical," by Joseph McFarland.**

The first, by a non-medical writer, is avowedly for the lay reader. It is not an entomological treatise, but an easily read discussion of the part played by insects in the transmission of disease. As such, it is of extreme value to the laity and contains much that the physician does not know sufficiently well to make it available to his neighbors. He who understands the biological interrelationships of *Homo sapiens, Anopheles maculipennis* and *Plasmodium vivax* is a much more valuable citizen than he who knows only that quinin will alleviate that symptom complex which we term malaria. He is more valuable because he knows the natural history of the disease and knows how the disease may be prevented. The physician need not be an entomologist. Doane's book will not make him such, but it will help to inform him upon certain matters concerning which the laity has the right to consider him informed.

McFarland's volume, while intended primarily for medical men, can safely be placed in the hands of those not scientifically trained. For the practitioner it states, succinctly and entertainingly, much that will give him a broader understanding of life, much that will tend to expand rather than contract the intellectual horizon.

O. T. S.

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*Insects and Disease. By R. W. Doane, Assistant Professor of Entomology in Leland Stanford Junior University. Duodecimo of 227 pages, with 112 figures. Cloth. Henry Holt & Co., New York. August, 1910. Price, $1.50 net; by mail, $1.62.

Biology, General and Medical. By Joseph McFarland, M. D., Professor of Pathology and Bacteriology, Medico-Chirurgical College of Philadelphia; Fellow of the College of Physicians of Philadelphia. Duodecimo of 440 pages, with 160 illustrations. Cloth. W. B. Saunders Co., Philadelphia and London. November, 1910. Price, $1.75 net.

Civic Pride.

If the sentiments of the mass of the people are in any degree reflected in the statements in the daily papers, one must admit that some at least of the accusations leveled by our foreign cousins at America and especially at the West are not without foundation. Stimulated by the growth of the city in the last ten years, we see all about us the slogan, "a million in 1920." Let us be large, let us have always before us the example of Pau-puk-keewis, who desired, in whatever animal shape he took, to be larger than any of the others, careless whether the increase in growth was accompanied by increased aptitude. But let us also remember what happened to the unfortunate seeker after size. Stirred again by the same fact of great increase, we desire the Olympic Games in a few years. We wish to collect a very large number of people here for a periodic event, that they may admire the greatness of the city, and depart, leaving as much money as possible behind, and carrying away in its stead a vast admiration for Cleveland. Size is good, size is excellent in many ways, but does mere size carry greatness? Let us consider. We have approached the 600,000 mark in population, we have a splendid commercial situation, we are entering the ranks of the great cities of the earth. We have an insecure water supply, a primitive method of sewage disposal, inadequate funds for the upkeep of street cleaning, insufficient sanitary and other police. We are classed among a half dozen of the dirtiest, smokiest cities, and except where some unusually bad epidemic of disease or crime appears, the discussion of these matters is relegated to the inside pages, near the lost dog advertisements. Suppose we reach the coveted million, suppose we get the Olympic Games, and build an expensive stadium for their proper display. Suppose at the same time that during these games, to which will be called a large number of transients who are quite unacclimatized to the peculiar qualities of Lake Erie water, we develop a "great" epidemic of typhoid, which will carry off many visitors and many of the newly acquired increment, in what will that benefit the fair fame of the city? One should make a sharp distinction between large and great. Would it not be better to devote our energies to the removal of some of the disabilities from which we now suffer before we make herculean efforts to further complicate matters by the addition of new citizens and new responsibilties? Passing by the fact that in general the growth of the large cities is at the expense of the country districts, and consequently not an unmixed benefit in itself, have we not sufficient to occupy our minds in plans already conceived and in part completed? The tuberculosis movement, Warrensville, the intercepting sewer, high level bridges, development of the parks, improvements in street cleaning, modifications of the water supply, completion of the group plan, and other matters are already accepted as responsibilities by the city and for the most part are held up on account of lack of funds. These are all worthy civic enterprises, and are in themselves enough to keep us occupied for some time without adding others. As long as the Cuyahoga is a drainage canal, an ordinary sewer, what is the use of increased dock space unless with a view of the formation of septic tanks so that the water inside the breakwater will be less polluted? It would appear that to the prospective resident of the desirable type, the assurance of pure air and water, the possibility of attractive outings in the parks, the sight of clean streets and handsome public buildings would have greater attractions than the mere fact of a million inhabitants as against eight or nine hundred thousand. And it would appear also that the business industry for which the city is justly noted, would, if it be founded on a basis of decency, be stimulated by such civic improvements rather than depressed.

R. G. P.

Lodge Practice.

The subject of lodge practice is attracting the attention of the medical profession at present more than at any previous time in this country, and its evils and advantages are being presented in such plain terms that if the final result prove evil it will not be because the profession has been insufficiently warned, but because it is the deliberate opinion of the large proportion of its members that lodge practice is a desirable or at least an inevitable outcome of the present spirit of commercialism of which our profession seems to be imbibing its full share. It is not from its ethical but rather from its economic standpoint, therefore, that we wish to consider the situation.

Lodge practice may be described as a practice wherein a physician is hired by a body of people bound together for mutual aid and protection, especially in times of want and sickness. Naturally one of the first requirements is to provide such aid at the lowest possible cost to those upon whom the burden falls. To this end, among other things, it is important to secure a physician who will take care of their sick at a minimum fee. It may well be supposed that this attempt to minimize doctor's fees was not cheerfully acceded to in its earlier inception and it may have been that the fees originally paid were sufficient to make their recipient feel that he was being reasonably requited for his services, but the inevitable outcome of the whole matter was that as the number of lodges increased and the number of doctors in need of practice increased, competition to secure the position of lodge doctor became more acute and the lodges naturally took advantage of the situation just as any other commercial enterprise would to lower the salaries paid to their physicians; so that it happens that in most lodges, in New York for instance, $3.00 per year per family is the average price paid and this includes attendance upon all the members of that family.

This practice has become securely engrafted upon the profession in some foreign countries, much to the discomfiture of the profession which regards it as an evil, but finds itself unable to cope with the situation. It is growing rapidly in this country, more particularly in the East, but here in Cleveland, it is, to say the least, not uncommon and it seems to us that it may be profitable to us at this time to consider the future. It will be the young, ambitious, struggling practitioners of today who will be affected and the problem *must be solved by them.* It is hardly reasonable to suppose that men already established in their life's work on a basis reasonably satisfactory to their necessities of life and their pride in the best traditions of their profession, and therefore not susceptible to the appeal of the quick returns and plenty of work attached to lodge practice, will exert themselves more than passively to counteract the commercialism which is insidiously changing the traditions, ethics and ambitions of our profession.

We therefore commend to the younger practitioners both in and out of lodge practice a perusal of extracts from a paper by Dr. Morris J. Cluman of New York, which appeared in the *New York Medical Record,* Oct. 22, 1910, and were extensively quoted and commented upon in the *Journal A. M. A.,* Nov. 5, 1910.

After calling attention to the fact that there are between 1500 and 2000 lodges in the lower east side of New York, each employing a physician, he says:

"Twenty years ago, when lodge practice was in its infancy, societies would send humble delegates to some physician and ask him to accept the office of lodge doctor for a fair and reasonable consideration. In most cases, the physician thus approached would think twice before entering into such an agreement since, very naturally, routine family practice with its direct returns for every call seemed more remunerative than cheap contract practice. However, young and ambitious medical tyros naturally sought some means of getting patients to come to them and this seemed an easy way to help make both ends meet and also to obtain what seemed to be a legitimate and ethical way of advertising oneself.

"'Tis true that for some years all physicians who undertook such lodge practice found in it a wonderful steppingstone toward obtaining a medical reputation. The lodge doctor found that he came in contact at the sick bed with a large class of patients who would not have patronized him in any other way. In time, however, the lodge physician, after establishing a reputation as a busy practitioner—and perhaps as a good one—became more or less independent. He discovered that it now paid him to disentangle himself from the onerous duties of the lodge doctor and once more to resume straightforward family practice. What with the advertisement he had received, the numerous families who had employed him in the capacity of lodge doctor and the normal growth of his regular practice, he now found that financial affairs went smilingly with him even after giving up these societies. Very naturally such shining examples of medical success and pseudo-prominence came to be regarded with envy by others in the East Side profession and more especially those of the younger element.

"Hand in hand with the increased number of physicians on the East Side a keen competition now arose among them to be elected as lodge physician in as many societies as possible. . . . But now the quilt had been reversed. It was the doctors who sought after the societies and not vice versa, as formerly. The societies found that, inasmuch as physicians were so anxious to be their lodge doctors, they could well afford to discriminate and choose from the numerous candidates.

"At first the chief qualifications for a physician who wished to be a lodge doctor were his medical skill and knowledge, but . . . . it was not long before the physician with the best business instincts 'crawled and intruded' into the occupancy of these positions. The physician who knew how to ingratiate himself into the good-will of some of the individual leaders or more active members of these societies were almost invariably elected. At first, he simply had to be a 'good fellow' with them to become the holder of the coveted positions. In time, even that was not enough. He had to hold out more inducements, and these inducements naturally varied with the caliber of the men with whom he was dealing. Sometimes for judicious distribution of a few 'shekels' among the most influential of the society leaders brought the physician the necessary votes to elect him. Sometimes it was the unwritten promise of a bounteous blow-out to the members if he were elected. . . . It often happened that a worthy medical candidate would be defeated by his more Philistinic colleague. It is easy to see what a deplorable state of affairs such an unequal competition has naturally and inevitably brought about."

"Let us consider what little chance a young graduate now has on the East Side. If he happens to be a well-trained man from a good medical school, a hospital man and perhaps with a good preliminary medical education, it is all the worse for him. He will not be given a chance to practice medicine legitimately. A fair competition would be conducive to his medical progress, but when he discovers that commercialism has become the prime factor, it is not long before his lofty ideals are dragged and sullied in the dust. Especially is this true of the able but needy young practitioner. He soon discovers that the only way he can build up a practice is by getting lodges. Instead of devoting his spare time to perfecting himself in his medical knowledge he is compelled to devise ways and means for obtaining societies. The iron heel of necessity compels him to become proficient in the invidious art of winning out at society elections. His medical mind becomes warped, and instead of progressing ethically he gradually retrogrades into a proselyte of commercialism and a mere huckster of medical advice.

"We are in too enlightened an age not to be able to remedy or at least to make lighter most evils, and the evil of lodge practice is one that can be solved and eradicated. To do this, vigorous and strenuous action must be taken by the East Side physicians. In the main it is only by a return to their medical ideals and by grappling these ideals to their souls with hooks of steel that they can solve this problem."

F. E. B.

Quack Methods of Advertising.

The "Great American Fraud" has other forms than the quack pills and potions which Samuel Hopkins Adams exposed in *Collier's Weekly*. Orthopedic appliances, braces, shoes, shoulder braces, flatfoot insoles and the like are sold and their use advised by totally irresponsible business people who make no pretense whatever of medical knowledge. With them, as with the quack, self diagnostication is the lever with which they move the public.

Within the last few days physicians in Cleveland have received a letter from a certain shoe company of this city advertising an arch support for flatfoot. The letter, addressed to the "Dear Doctor" contains also a circular which is evidently intended for the laity so that they may diagnose their own cases. The letter to the doctor gives mysterious medical authority to the circular by stating that "A surgeon of an orthopedic hospital in Boston has written a very interesting article, in one of the medical magazines covering exactly the same points as we do in our circular, which we trust you will carefully (sic) read." A heading from this circular entitled "Diagnose Your Own Case. No Guessing" will show it to be on a par with the advertising methods of the quack who says "Let the urine stand over night in a glass and if in the morning there is a sediment on the bottom it is a sure sign of kidney disease."

In this misleading paragraph of the circular there are three figures labeled Nos. 1, 2, and 3. No. 1 pretends to be "That of a natural foot, No. 2 that of a partially, and No. 3 that of a completely fallen bridge or arch—known as flatfoot." In reality No. 1 is the reproduction of an imprint of a contracted or chubby foot and is not the normal foot at all; No. 2 is really that of an ordinary normal foot; while No. 3 is a normal foot with a somewhat low instep. None of these figures show any degree of pes valgus or planus, while No. 1, purporting to be that of a normal foot, is not possessed by one person in a thousand.

The object, therefore, of this part of the circular at least, is to get the dupe—or the "Dear Doctor" for him—to take an impression of the foot on paper as directed and to compare such imprint with these figures. If the imprint does not correspond to Figure 1—and this is almost certain to be the case—then the patient is supposed to have flatfoot, the severity of which should be graded from these figures of the imprints of perfectly normal feet. The circular ends with such testimonials as usually appear in quack literature. W. G. S.

Department of Therapeutics.

Conducted by J. B. McGEE, M. D.

Bacterial Therapy: In the *Monthly Cyclopaedia* for October, F. E. Stewart presents some points in bacterial therapy, and proposes the name "bacterin" as synonymous with "bacterial vaccine". As to the value of typhobacterin or typhoid vaccine as an immunizing and curative agent, it appears that its power in immunizing armies is now generally recognized, but reports concerning its curative power are not sufficiently conclusive to warrant dogmatic statements. As to the Neisser bacterin or gonococcic vaccine, it is generally agreed that in the treatment of acute cases of gonorrhea, as large doses are not required as in the chronic cases, and also that arthritic cases require much larger doses than the urethral ones. Acnebacterin is said to give better results in the treatment of comedones than the staphylobacterin, while the latter seems to be preferred in acne indurata. Many cases of acne do well under the treatment with mixed stock vaccines—albus, aureus, and citreus, other cases apparantly require treatment with autogenous vaccines. Treatment with combined staphylococcic vaccine has proved quite successful in chronic furunculosis. In spite of the frequent failure of bacterial therapy in staphylococcic infections, excellent results are often obtained from treatment with stock vaccines. As to the combined treatment with serum and bacterin, he has found it effective, and advantages are obtained by using the bacterin first, as it alone may be found to be sufficient. It is, of course, necessary that polyvalent serum or a polyvalent bacterin be employed, and one brand may prove efficacious when another one fails, as in a case in which B. C. Hirst was a consultant. As to the pneumococcic bacterin, attention is called to the following points: early diagnosis, early administration of the vaccine, and the necessity for full doses. Apparently beneficial results have followed its use. The statement is sometimes made that bacterial vaccines are perfectly harmless. As a general statement it is safe to say that drugs which are "perfectly harmless" are perfectly useless. Bacterial vaccines or bacterins consist of killed pathogenic bacteria and their toxins. They are therefore toxins, not antitoxins or curative sera with which they are frequently confounded by physicians unfamiliar with bacterial therapy. Used with proper precautions and with properly selected cases, it may be stated that they are harmless, and not only do no harm but are directly curative. When used without discretion, however, they may do harm, although fortunately it is slight and no serious results are to be apprehended.

Neuralgia: Geo. F. Butler in *Therapeutic Medicine* for October asserts that in the treatment of neuralgia, whatever has the greatest effect in invigorating the system, and restoring all the functions of the body will be most uniformly of the greatest service in the treatment. Among the drugs which are commonly employed for the relief of these conditions, we have various combinations of the coal tar products with the bromids and caffeins, and among the older drugs aconitin, gelseminin, and cannabis indica, next to the coal tar products, are greater than any other drugs in their ability to relieve neuralgic pain, whether the neuralgia be mild in character or severe as that met with in migraine. Then too, it is not to be forgotten that in many cases of neuralgia depending upon poor circulation and nervous exhaustion, full doses of strychnin will produce valuable results, although they cannot be relied upon to be of any permanent advantage when disconnected from the supporting treatment. Cicutin is another valuable drug in the neuralgia affecting chlorotic girls. Gelseminin is especially valuable in congestive neuralgia, and in diathetic and intercostal neuralgia aconite and asclepidin are invaluable remedies. In the neuralgia of exhaustion, both strychnin and atropin are valuable. A combination of remedies, without doubt of much value in various neuralgias depending upon malarial intoxication, and also good for neuralgic pains not arising from this cause, is the combination of a few grains of quinin with a minute dose of morphin, the only difficulty with this treatment being that the patient is apt to become addicted to the morphin. Another drug of great value in certain forms of neuralgic pains, particularly in the head, is chloral, and butyl chloral hydrate is especially valuable in facial neuralgia and neuralgia from carious teeth. Chloral itself will often prove of singular service when other remedies have failed. In all persons with atheromatous blood vessels and high arterial tension who suffer from violent neuralgic pains affecting the fifth nerve, very great good can often be accomplished by the use of full doses of nitroglycerin given simultaneously with full doses of strychnin. Many cases of neuralgia are due to toxemia of some sort or another. Then too the relief of a uricacidemia will cause the neuralgia to disappear. The urine should always be examined, and free elimination maintained. Many cases of obstinate neuralgia can be entirely cured by cleansing out the bowels and rendering the blood more alkaline, overcoming the acidemia by saline laxatives and alkalies.

Arthritis Deformans: Clarence Edward Skinner, in the *American Journal of the Medical Sciences* for November, considers the treatment of arthritis deformans, believing that whatever theory as to its causation be accepted, the therapeutic indications are essentially the same. These are: (1) To close possible avenues of infection, such as local suppurative, ulcerative, and catarrhal processes, carious teeth, etc. (2) To improve the general and local nutritional processes, whereby the physiological resistance of the various tissues and the efficiency of the vital activities in general, will be augmented. (3) To accelerate the elimination of katabolic products and toxins which depress the vital activities. (4) To limit the formation of autotoxins. The treatment of the disease, then, resolves itself into applying those measures which will satisfy the above mentioned indications in the most effective manner, the relief of pain, and the management of the affected joints. He considers the use of dry hot air, electricity, hydrotherapy, etc., and believes that drug medication is unsatisfactory as regards the securing of curative results. No substance has yet been discovered which exhibits a specific curative action as far as the disease, per se, is concerned, but there are a few medicines which appear in some cases at least to exhibit considerable influence over the condition. The iodid of iron has given him the best results. It should be given for periods of six weeks, with an intermission of two or three weeks. Cod-liver oil does good service in cases characterized by emaciation, if well borne by the stomach. Arsenic and strychnin are fairly useful in many instances as general tonics. Chlorid of gold and sodium, and sodium or potassium iodid, or hydriodic acid sometimes seem to render considerable service, but they fail to influence the disease in such a large proportion of cases that their importance is not nearly so great as is generally supposed. The beneficial influence which thyroid extract exhibits in some cases of this disease is particularly interesting, because of the possibility that aberrant function of ductless glands may be concerned, to some extent at least, in its etiology. He has given it to a few patients and feels that they have derived considerable benefit therefrom, and the remarakble results which have followed its administration in some cases demand that it be thoroughly investigated. The relation of the salicylates to this disease deserves special mention, as they sometimes render excellent service in relieving pain and swelling, although it is improbable that rheumatism is an etiological factor in any great number of cases: whatever the explanation, the fact remains that the salicyl compounds are sometimes very helpful in relieving the painful joint condition present.

Active Principles: George F. Butler, in the *New York Medical Journal* for Nov. 12, makes a plea for the use of the active principles as opposed to the use of the gross drugs. It is his firm belief that true and efficient drug therapeutics is impossible with the preparations ordinarily used, the classic galenicals and the innumerable specialties. Active principle therapy is therapy in action; it is the therapy that will relieve or cure our patients; it is the tomb of both galenicals and specialties: it represents the rehabilitation of the true medicament, conscientiously prepared, simple, active, always the same, and perfectly soluble. He asks, why not indeed, omit from our materia medica, entirely all mention of the various preparations of belladonna, cinchona, aconite, nux vomica, erythroxylon coca, pilocarpus, colchicum, hyoscyamus and all other drugs, the active principles of which fully represent them? The first qualities to seek from a medicament are uniformity in strength, and identity of action at all times. The active principles will always be the same and can alone fulfill these conditions; while it is beyond dispute that the quality of medicinal plants varies in accordance with certain meteorological conditions. When, however, it is impossible to procure the active principle of any drug, we must, of course, depend upon a well made galenical preparation from a first class specimen of the crude drug.

Strophanthus: In the *Journal A. M. A.* for Nov. 12, Robert A. Hatcher and Harold C. Bailey, consider the clinical use of strophanthus, believing that the clinical use of digitalis has proved one of the greatest problems of medicine. Despite our advances in this group, the problem has been advanced only, not solved, and few practitioners can invariably distinguish the toxication of digitalis from the symptoms of cardiac disease. They believe that the different members of the digitalis group exert the same direct action on the heart, when once introduced into the circulation and the choice of the member of the group resolves itself into, primarily, a consideration of the relative rates of absorption, excretion and destruction, and secondarily into that of the relative intensity of the direct cardiac action on the one hand, and of the indirect and side actions on the other. They have called attention to the great confusion existing in regard to the doses of strophanthin and strophanthus commonly advised, the largest daily dose given being several hundred times the smallest single dose. This fact shows how limited is our knowledge of the best method of employing these substances, and how necessary is an accurate method of determining their relative activity as a prerequisite to reliable clinical studies of their effects. They find that even such closely related bodies as strophanthin and crystalline ouabain (strophanthin being methylouabain) show different ratios of activity by subcutaneous and intravenous injection into the cat, as these two bodies show differences in their rates of absorption from subcutaneous tissues. The average therapeutic dose of crystalline ouabain, or crystalline strophanthin so-called, by intravenous injection is about (0.52 mg.) the equivalent of 1.5 mg. digitoxin or 4 c.c. of good tincture of digitalis. They assert that the clinical use of strophanthus by the mouth is irrational in the present state of our knowledge of the subject. Experiments also seem to show that the absorption of digitalis is also variable, but less so than that of strophanthus. The choice of the member of the digitalis group which is to be used in a given case, whether the tincture or infusion of digitalis or one of the active principles, or whether it shall be strophanthus, strophanthin or ouabain, must be considered mainly as a question of administration, and not with the view to securing any essentially different action, until we know more of the differences following equivalent doses. The oral administration will still continue in favor because of its convenience, but the intravenous or intramuscular method is preferable from the certainty of rate of absorption. We now have two pure digitalis principles available, crystalline ouabain, and crystalline digitoxin: ouabain may be used in sterile solution but digitoxin is insoluble in water, so they conclude that crystalline ouabain should be preferred in urgent cases, and used either intravenously or intramuscularly.

Veratrum Viride: In the *American Journal of Clinical Medicine* for November (from the *Lancet Clinic*) Dr Landis states that 18 years of clinical experience with veratrum viride, under a constantly widening variety of physiological conditions, has led him to regard it as the most valuable single therapeutic resource at his command. Its value lies in its power as an eliminant, and when we consider that elimination in strictly medical cases is of the same enormous importance that drainage is to surgery, veratrum cannot be overestimated. Neither can we overlook its power to overcome sthenic states, and thereby actually to abort or modify in a favorable way acute inflammatory conditions, nor its power as an antispasmodic. Possibly it increases the normal resistance or acts as an antidote to toxins. Possibly it works through the vasomotors, restoring to the normal inflammatory areas where the vasomotor control has been lost. In these cases of acute inflammation with high fever, rapid full pulse, and impending or actual delirium, its action is little less than magical. Fitch believes that of the three agents used to reduce the rapidity of the heart and control the blood pressure in the vessels, veratrum gives the best results. Gillespie describes the action of veratrum in convulsions in a child a week old: in two minutes the spasm relaxed, and in a few minutes more the child began to vomit, had a slow pulse and sighing respiration, and in spite of total suppression of urine for more than 24 hours, the child was alive and well. "These children have a feeble pulse, cold surface and high internal temperature, and I never saw one recover until I began to use veratrum. In cases of any acute toxemia, it should be given in sufficient doses to produce immediate effects. Given thus, it is the greatest life saver we possess."

Cardiac Disease: The *Therapeutic Gazette* in its November number comments editorially on the state of the blood in cardiac disease, and its bearing on treatment. It not infrequently happens that patients present themselves suffering from ruptured compensation, which has developed in the course of valvular disease, and who also suffer from a very considerable degree of anemia, which may be overlooked unless the physician is careful to make routine examinations of all portions of the body when a case presents itself for study. Even when a considerable degree of anemia is discovered, it sometimes happens that the physician fails to appreciate its importance as an etiological factor in the case. A moment's thought makes the fact evident that the administration of cardiac stimulants to anemic patients, however advantageous their administration may be in other instances, will be followed by little improvement unless the state of the blood is bettered. Most of the drugs which act as valuable remedies in cases of ruptured compensation, do good not only by regulating the cardiac mechanism, but also by increasing the nutrition of the heart by an improvement in its circulation. If, however, the patient is anemic, the heart muscle is supplied by a fluid from which it is difficult for the heart to obtain the required quantities of oxygen and nutriment. Most of the acute infectious diseases produce a very considerable degree of secondary anemia, and this is particularly true of rheumatism, which in turn is the most frequent cause of valvular lesions. The deduction is therefore that these patients need not only digitalis or strophanthus and rest, but they also need a course of iron and arsenic with sunshine and as much fresh air as their condition permits. Attention to this collateral condition of anemia is often followed by an improvement which cannot be otherwise obtained.

The Nitrites: In *Merck's Archives* for October, W. J. Conklin considers the indications for the use of the nitrites. The physiological action of this group of drugs is pronounced and displayed chiefly on the blood vessels and the blood. While they in a measure depress the vasomotor centers, their force is largely and directly expended upon the muscular walls of the smaller vessels, and, by widening, these blood paths literally bleed one into his own veins, and cause a prompt and marked fall of blood pressure. This vascular relaxation, of which the flushed face is an evidence, extends to the entire peripheral circulatory system but is especially marked in the splanchnic area, cerebral arterioles and in the coronary arteries. The nitrites change the hemoglobin of the blood into methemoglobin, and thus impair the oxygen-carrying power of the corpuscles. As to the heart, the nitrites may indirectly bring relief to a fagged heart by lessening peripheral obstruction, and thus lightening its load; but if they have a true stimulant action it is of short duration, and the zone between stimulation and depression is so narrow as to suggest caution in their use in all forms of circulatory enfeeblement. Crile and others have demonstrated that the heart failure of acute infections is really a vasomotor paralysis, and in these conditions the giving of a vasodilator drug adds to the paresis and intensifies the abnormal blood distribution. It may be safely said that with our present knowledge, the nitrites have no place in the therapy of collapse in acute infections, in the shock of traumatisms, or in the accidents of narcosis. A persistent high blood pressure is indicative of a distinct pathological change in the cardiovascular or renal systems, one or both, and its early recognition will indicate the necessity for interference in many cases to prevent irreparable loss to heart and blood vessels, and there are few who have not observed the magical yielding of ugly symptoms to the lowering of an excessive hypertension. It is not good practise, however, to resort to purely blood pressure-reducing drugs before an effort is made to reach the end by regulating the daily living and eliminating the causative toxins. A good old fashioned round of calomel and soda, will often do better work than nitroglycerin in reducing hypertonus. The diagnosis of interstitial nephritis with high blood pressure readings, is considered by many as sufficient justification for continuous drugging with nitroglycerin, a fallacy which cannot be too strongly condemned. Some diseased kidneys functionate well only under pressure, and to disturb the compensation is to usher in at once the end symptoms of a nephritis. In a recent paper, H. C. Wood, Jr. strongly protests against the indiscriminate use of vasodilator remedies in chronic cardiac disease, and attributes the little harm which has come from this practise to the fact that, as ordinarily used, the drugs are practically without influence for weal or woe. Undoubtedly many of the accredited failures of nitroglycerin come from improper giving and from the use of preparations which are inert owing to chemical changes. It should always be prescribed in freshly made solutions or in the official spiritus glycerylis. For routine use and when sustained effect is sought, sodium nitrite and erythrol tetranitrate, are by long odds the best of the class. The action of both is produced promptly, persists for about four hours, and gradually passes off as the drugs undergo oxidation.

Thiosinamir J. Ewing Mears, in the *Medical Record* for Nov. 19, reports on the use of thiosinamin in the treatment of cicatricial formations following burns. In a case in which a mass of cicatricial formation involved the entire arm of a young girl, he used thiosinamin locally and internally, hoping to produce some absorption of the mass and check the tendency to further growth. Internally the remedy was used in the form of pills, and externally as an ointment. At the beginning of the treatment one grain was taken after meals, as nausea followed after a time the dose was reduced to one half a grain three times daily. The ointment was an eight percent. one, and as some irritation appeared after its use for six months the strength was reduced to five percent. After a treatment of about three years in which, however, the remedy was really used only in the first and third, there is a decided reduction of the cicatricial mass, so that at the present time the scarred surface is quite on the level with the normal integument, and has lost the bluish color which was so marked in the early stage. He proposes to continue the use of the remedy with the hope of securing entire removal of the scar tissue, and approximate a return to a normal condition of the skin.

Department of Pharmacy.

Conducted by H. V. ARNY, Ph. G., Ph. D.

Physiologic Extracts: A line of pharmaceuticals bearing this name is described in *Bulletin des Syndicats Pharmaceutique de l'Est (National Druggist, 40,* 469). The manufacture of these extracts is based on the method of Perrot and Goris of first sterilizing the fresh plant by exposure to vapor of acetone, chloroform, alcohol, or any other liquid whose boiling point is less than 100° C., this treatment destroying the enzymes that cause decomposition of the more delicate constituents of the drug during the ordinary method of drying. The drug so treated is dried, is extracted with 75% to 80% alcohol and the tincture evaporated in vacuo without heat, the last traces of moisture been removed by treatment with anhydrous ether and final drying over concentrated sulphuric acid.

Emulsion of Silver Iodid: J. K. Thum *(American Journal of Pharmacy, 82,* 507) reports that this emulsion is best prepared by mixing the potassium iodid with a 3/10 of 1% gelatin solution and then adding the silver nitrate solution, little by little, shaking after each addition. The resulting product is a milky fluid that exhibits the iodid in colloidal form, as it filters through paper without separation of the iodid.

Fresh Medicines: Professor R. Hemm at this year's meeting of the Missouri Pharmaceutical Association *(Apothecary, 7,* 22) read an important paper on this subject. Among the products that should be dispensed only when freshly made are calomel and sodium bicarbonate (which should always be thoroughly triturated), emulsion of cod-liver oil (which can be kept a long time only by addition of preservatives, the least harmful of which is alcohol or glycerin), syrups of hydriodic acid, of ferrous iodid, and of phosphate of iron, quinin and strychnin. Of course infusions and decoctions must be freshly prepared as is also the case with chalk mixture, Griffith's mixture, ointments and cerates and solution of magnesium citrate.

Physiologic Standardization: A valuable contribution on this subject by Githens and Vanderkleed which appears in the October number of the *American Journal of Pharmacy (82,* 453) does not easily lend itself to abstracting.

It deals on one hand with cardiac stimulants; on the other with cardiac depressants. Among the first class, apocynum, convallaria, digitalis, squill and strophanthus are discussed. The writers find the following minimum lethal doses for 250 gram guinea pigs.

Apocynum: fld. ext. 0.075 c.c.; tincture 0.75 c.c.
Convallaria: fld. ext. 0.075 c.c.; tincture 0.75 c.c.
Digitalis: fld. ext. 0.1 c.c.; tincture 1.0 c.c.; extract 0.025 gm.
Squill: fld. ext. U. S. P. 1890, 0.25 c.c.; fld. ext. U. S. P. VIII, 0.5 c.c.; tincture 0.75 c.c.
Strophanthus: fld. ext. 0.0025 c.c.; tincture 0.025 c.c.

The authors' method of assay is by giving three guinea pigs respectively the above dose, 11/10 this dose and 9/10 this dose of the preparation in question. If all the animals die, 8/10 the dose, 7/10 the dose are given other animals and when the minimum lethal dose is established, the preparation is diluted proportionally to the standard dose. Likewise if all three original animals survive, larger doses of the preparation are given and the preparation is concentrated to standard strength.

The cardiac depressants which were studied are given below, in terms of standard lethal doses (250 gram guinea pigs).

Aconite root: fld. ext. 0.010 c.c.; tincture 0.10 c.c.; extract 0.002 gm.
Gelsemium: fld. ext. 0.375 c.c.; tincture 2.5 c.c.; extract 0.100 gm.
Veratrum: fld. ext. 0.05 c.c.; tincture 0.5 c.c.; extract 0.015 gm.

While the stimulants are glucosidal and do not lend themselves to chemical assay, the stimulants are alkaloidal and can be assayed chemically. Comparison between the physiological and chemical assay of aconite and gelsemium, however, show marked difference in potency, due to the fact that these drugs contain physiologically inert alkaloids as well as the one which is active.

Oil of Sesamum: Otto Raubenheimer *(American Journal of Pharmacy, 82,* 476) enters a plea for reinstatement of this oil into the Pharmacopoeia from which it was dropped in the revision of 1880. This oil, according to the writer, is superior to olive oil, cotton seed oil or linseed oil, in the manufacture of the official oleaginous liniments.

Activity of Old Elixir of Pepsin: Contrary to the results of Thibault, A. and A. L. Petit *(Jour. pharm. Chim.,* through *Chemical Abstracts, 4,* 2877) find little loss of strength in Elixir of Pepsin on standing. 1.6 c.c. of a freshly prepared, and the same quantity of a 6½ year old sample of the elixir, (both represented 16 milligrams pepsin and containing 18% of alcohol) digested 10 grams fibrin immersed in 60 c.c. of 3/10 of 1% hydrochloric acid and 140 c.c. water.

Academy of Medicine of Cleveland.

CLINICAL AND PATHOLOGICAL SECTION.

The seventy-second regular meeting was held at the Cleveland Medical Library, Friday, November 4, 1910, W. C. Stoner in the chair.

W. B. Laffer showed a young girl, aged 18 years, who about four months ago fell out of bed. Immediately there was pain in the right arm near the elbow, and in the back. She thought she was unconscious for a few minutes after the fall. The next morning she noticed vesicles over the outer side of arm and over the dorsal surface of the ring and little fingers. No muscles were paralysed. About two months after the injury a surgeon cut down on to the ulnar nerve at the elbow to separate supposed traumatic adhesions without producing any change in the symptoms.

When the case was first seen a couple of weeks ago, the girl showed no paralysis of any muscles of the arm or hand. She had loss of sensation to temperature, tactile, vibratory and pain sense over areas not quite conforming to those supplied by the second, third, fourth, fifth, seventh and eighth cervical and first and second dorsal nerve roots. The sixth and seventh nerve root areas seemed to be but partially affected.

The areas supplied by these nerves were not accurately conformed to by the anesthesia. Sense of position for the ring and little fingers was lost. Deep pressure sense was also lost. When the tuning fork was placed over the anesthetic area the patient did not feel the vibration which was plainly felt by the one supporting her arm.

She also gave Janet's pathognomonic sign of hysteria by saying "yes" when she felt the examiner touch her and "no" when she did not feel him touch her, observing the same rhythm used in touching her. This, together with the fact that she showed no paralysis of the muscles innervated by the same nerve roots that would be involved to create anesthesia over these areas, caused the demonstrator to believe the case to be one of hysteria. The case will be reported by him more in detail later.

W. G. Stern showed a plaster cast of a paralytic club foot from a neglected case of infantile paralysis. He drew attention to the fact that there had recently been an unusual number of cases of anterior poliomyelitis in Northern Ohio, including Cleveland. While the disease was not yet epidemic, if one could judge from the experience gathered in the epidemic in Massachusetts, there was great probability that Northern Ohio might be visited by such an epidemic next year: physicians should therefore be upon their guard to make an early diagnosis and promptly isolate any cases, just as in any other acute infectious and contagious disease.

The treatment for anterior poliomyelitis had undergone a complete change in the past two years. The treatment for the acute stage should be absolute rest to the spine, preferably in a plaster bed; counterirritants should not be used; and the general treatment should be the same as that for any other acute infection. From the very first the paralyzed limbs should be splinted to protect them from injury and to prevent deformity; the child should not be allowed to walk upon the paralyzed limbs as soon as a partial recovery might permit of their use, but rather should be kept in bed for at least a year. Massage and galvanic electricity were valuable in keeping up the tone of the muscles, but the usually employed faradic current from small batteries was useless, since the nerve showed the reaction of degeneration and would not respond to faradic stimuli.

The case from which the plaster cast had been made was under treatment for a time by the most competent men in New York City, but their advice had been disregarded and the child had been encouraged to walk upon the unprotected foot as soon as possible: on account of this a most severe form of club foot resulted.

J. V. Kofron showed a pessary, incrusted with phosphatic deposits, which he had removed from the vagina of a woman aged 84 on account of the hemorrhages which it was causing. It had been inserted 36 years before and had never been removed nor had douches been employed. It was removed with some difficulty, leaving a granulating raw area at the vaginal vault. The hemorrhages promptly ceased when it had been taken out and astringent douches given. Some interesting details as to the history of the use of pessaries were also given.

The program was as follows:

1. Vaccine Therapy in a Case of Lung Abscess, P. A. Jacobs. (Appearing in full on page 946.)

2. Lacerations of the Cervix, Viewed from the Standpoint of the General Practitioner, N. C. Yarian. (Appearing in full on page 938.)

R. E. Skeel, in the discussion, said that he was very glad that the speaker had touched upon the etiquette which should be observed by physicians who had occasion to treat a lacerated cervix in a patient who had been confined by somebody else. It was very difficult immediately after labor to estimate the amount of damage done to the cervix, just as it was impossible to judge the amount of relaxation of the vaginal outlet that would ultimately result even if no operative tear had taken place, but if submucous injury to the anterior vaginal wall had occurred. No man was justified in condemning a previous attendant for these injuries unless it was known that the methods used in delivery had been wrong and wilfully wrong in the early application of instruments to save the attendant's time or curry favor with the patient. He agreed that immediate repair of the cervix was not indicated in the absence of hemorrhage because it was difficult to secure good results, as had been proved to his own satisfaction by the outcome of several cases in which he had done immediate repair in order to control hemorrhage; this was satisfactorily controlled, but in each instance the repair was so bad that later interference was necessary.

Secondary repair of the cervix during the child bearing period was not indicated unless there was marked hypertrophy or erosion with tenderness and induration at the base of the broad ligaments, which he presumed to be due to infection of the unhealed laceration with lymphadenitis resulting therefrom. In some of these cases the pain and tenderness at the sides of the pelvis had been so marked that the ovaries had been removed under the delusion that they were the cause of the discomfort, when in reality trachelorrhaphy only was required.

That laceration of the cervix or something else connected with child bearing predisposed to carcinoma was well recognized, and as no other factor seemed adequate to account for this predisposition he was perfectly satisfied that the injury was its true source and amputation of the cervix was therefore indicated in any woman over 35 years of age, that is when the probability of child bearing was small and before the likelihood of the onset of cancer was great, if a previously injured cervix was hypertrophied or eroded or full of Nabothian follicles. He considered that amputation in such cases was preferable to simple repair since the entire area involved was thus removed.

Indications for trachelorrhaphy have been greatly restricted by modern aseptic obstetric technic since now nearly all cervical injuries heal or at least epithelialize if no infection occurs, and only the bad lacerations attain such a condition as to require subsequent repair.

A. J. Skeel fully agreed with the speaker's conclusions. He thought physicians had often themselves to blame by impressing upon their patients the necessity for immediate repair of lacerations without explaining to them the difference between cervical and perineal tears. The vast proportion of labor cases had a greater or less degree of laceration of the cervix. Some of the worst were preventable. In dry labor little could be done to avoid them but they were usually due to application of the forceps before the cervix was thoroughly dilated. If an examination were made between the pains the relaxed cervix might seem to be fully dilated when, if the examination were made during a pain, the dilatation would be found incomplete. With the exception of cases of placenta praevia the worst lacerations of the cervix occurred during the delivery of the aftercoming head in breech presentations: in such cases efforts at extraction should not be made until the cervix was completely dilated.

F. C. Herrick and R. K. Updegraff also discussed the paper.

3. Hypertension of the Portal System, Morris Schott. (To appear in full in the Journal.)

EXPERIMENTAL MEDICINE SECTION.

The fifty-second meeting was held at the Cleveland Medical Library, Friday, November 11, 1910, C. F. Hoover in the chair.

The program was as follows:

Phylogeny and Association in Relation to Certain Medical Problems.

1. Introduction, G. W. Crile.
2. Experimental Data: (a) Physiological, G. H. Sloan. (b) Morphological, J. B. Austin.

These papers will appear in full in the Journal.

COUNCIL MEETING.

The Council of the Academy of Medicine of Cleveland met Saturday, November 12, 1910.

The following names were ordered published: For active membership, C. A. Hall and H. N. Cole. For non-resident membership: F. C. Larimore, Mt. Vernon, Ohio.

It was moved and seconded that the Council of the Academy of Medicine of Cleveland go on record as being against School Inspectors treating pupils medically or surgically in school buildings. After a lengthy discussion it was voted that the motion be laid upon the table.

The President was instructed to appoint a committee to take charge of the arrangements for the Ohio State Medical Convention in 1911. R. Dexter, J. F. Hobson, A. F. House, J. R. McHenry and O. A. Weber were appointed.

ACADEMY MEETING

The seventy-eighth meeting was held at the Cleveland Medical Library, Friday, November 18, 1910, the President, C. B. Parker in the chair.

The following nominations for officers for the coming year were reported by the Nominating Committee: For President, J. M. Ingersoll and W. B. Laffer; for Vice-President, W. W. Holliday and R. K. Updegraff; for Secretary, S. H. Monson and O. A. Weber; for Treasurer, J. C. Darby and Leo Wolfenstein; for Trustees, T. A. Burke, W. T. Corlett, C. E. Ford and John Neuberger.

The following members were appointed an Auditing Committee: J. E. Tuckerman, C. A. Lenhart and Joseph Neuberger.

It was voted that the Academy endorse the invitation to the American Association for the Advancement of Science to hold their 1911 meeting in Cleveland.

The program was as follows:

Diagnosis of Functional from Organic Disease of the Nervous System, Hugh T. Patrick, Chicago.

The paper was discussed by C. F. Hoover, W. B. Laffer, C. L. Graber and H. S. Upson.

THE OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION.

The forty-ninth regular meeting was held at the Cleveland Medical Library, Friday evening, November 25, 1910, E. Lauder in the chair.

The program was as follows:

1. Report of Cases of Infantile Spinal Paralysis with Symptoms of Special Interest to Eye and Throat Surgeons, E. H. Porter, Tiffin. (To appear in full in the Journal.)

W. G. Stern, in the discussion, called attention to the fact that the germs causing this disease probably entered the system through the nose and that the nasal secretions should therefore be properly handled to prevent the further spread of the malady. He also stated that the organisms might attack the bulbar region and give rise to bulbar symptoms as appeared to have happened in one of the cases reported by the speaker.

2. The Origin of Coloboma of the Choroid and Retina with Demonstrations, Otto Landman, Toledo.

Microscopic sections were shown by the speaker, who is considered one of the world's authorities on embryology of the eye, and a lantern demonstration was given of some remarkable slides of his own original work, showing that coloboma of the retina and choroid was caused by faulty union of a fetal cleft.

3. A Retrospect of the Last Twenty-Five Years, R. D. Gibson, Youngstown.

The election of officers for the ensuing year resulted as follows: Chairman, S. H. Large; Secretary, J. E. Cogan; Councillor, Edward Lauder.

A decided innovation for this Section was the holding of an eye, ear, throat and nose clinic at Lakeside Hospital on the afternoon of the day of this meeting. It was especially for the convenience of out-of-town men interested in this line of work. About 20 visiting physicians were present. B. L. Millikin performed some operative work on the eye. W. E. Bruner demonstrated unusual cases in the dispensary. J. M. Ingersoll, W. J. Abbott and W. S. Hobson demonstrated tonsil enucleation and removal of adenoids on several patients.

CLINICAL AND PATHOLOGICAL SECTION.

The seventy-third meeting was held at the Cleveland Medical Library, Friday, December 2, 1910, J. S. Tierney in the chair.

C. W. Stone showed a case of progressive muscular atrophy. The patient, an English woman, aged 46, gave a history of a fall in childhood which apparently had somewhat affected the further development of the left leg. Transient attacks of paralysis of certain of the eye muscles had occurred: these lasted usually about a month and led to diplopia, ptosis, or fixation of the eyeball. The present trouble began about one year ago with pain in the left thumb, weakness and atrophy of the thumb muscles. A month later the ball of the right thumb was similarly affected. The condition was now most marked in the right side, the thenar eminence being greatly atrophied, also the forearm, and the deltoid. There was wrist drop on the right side. The left leg showed a flabby condition of some of the muscles with toe-drop and slight equinovarus. The sensory apparatus was normal and the affected muscles responded to faradic stimuli. There was no incoordination or ataxia. The condition was probably due to syphilis as the Wassermann and Noguchi tests were positive and the mononuclear cells of the spinal fluid were very markedly increased.

F. E. Bunts asked if the patient had complained of any continued pain similar to that she had had at first.

C. W. Stone replied that while the pain had been most marked at first she had had some most of the time. Gowers considered that such pain in these cases was really of rheumatic nature.

W. B. Laffer showed several very excellent radiographs taken by G. F. Thomas, of a case of multiple osteogenetic exostoses occurring in a young man aged 24 years, in which the exostoses involved the femora, tibiae and fibulae. These exostoses were of the so-called idiopathic variety, probably congenital as they were present, the patient said, since birth They had caused no symptoms, and had been discovered in making a routine examination of the patient who had developed typhoid fever.

Such exostoses were very apt to occur in several members of a family. A case was reported in which five out of six children born to a father with exostoses showed this bone anomaly. Other cases seemed to occur in families in which children showed atrophy of the thyroid gland, those children without atrophy escaping. The condition was transmitted chiefly through the males.

Frequently exostoses have been covered with bursae where there was a muscle overriding them. In some instances exostoses from a femur have made false joints with exostoses from the tibia or fibula. These joints had synovial membranes and were, together with the bursa, often in communication with the true joints, and often contained foreign bodies such as pieces of cartilage and bone.

These patients often showed other anomalies of the skeleton like inequalities in the length of the extremities and abnormal curvatures of the long bones.

Exostoses practically never occurred on the face, although six percent of the cases had exostoses of the cranial bones. In the upper extremities the exostoses were most numerous near the junction of the epiphysis and diaphysis closest the shoulder joint while in the lower extremities they were most frequently in the epiphyseal junction nearest the knees. Sometimes these exostoses incapacitated the patient by their mechanical hinderance to motion.

Numerous cases had been reported in which exostoses had grown inward from the cranial or spinal bones and produced hemiplegia or paraplegia. Some cases had been reported in which the exostoses were extremely numerous, reaching the number of 94 in one instance. They varied in size up to a mass as large as the fist. They might have sharp or blunt points or narrow or wide pedicle attachments. They were frequently cartilaginous or tipped with cartilage. They sprang from epiphysis, periosteum or soft bony material on the inside of the bones, and were due to supernumerary osteogenetic centers.

The case exhibited was peculiar in that the exostoses in some instances did not rise perpendicularly to the shaft of the bone, those at the lower end of the femur projecting two or three inches upward parallel with the shaft, causing shelf-like projections. The malleoli in this case showed diffuse enlargement. There were numerous cyst-like formations present at the ends of the bones closest the knees. There was no enlargement, or exostoses of other bones.

The program was as follows:

1. Fibrous Nasal Polypi with Exhibition of Specimen, D. A. Prendergast and W. J. Abbott. (To appear in full in the Journal.)

2. Submucous Resection of Septal Deflection, One Hundred Cases, Myron Metzenbaum. (To appear in full in the Journal.)

T. A. Burke said that deflected septum was the most frequent cause of obstructed breathing. The operation for its correction had been wonderfully perfected and he thought that the instruments which had just been shown would prove a valuable addition to the operator's armamentarium.

3. A Method of Surgical Approach to the Lower Ureter, F. C. Herrick. (Appearing in full on page 963.)

W. E. Lower said the fact that so many different methods had been described for reaching the lower ureter, showed that the procedure might sometimes prove very difficult. He doubted whether an incision of this length would be sufficient in certain complicated cases. It was only by employing it a great many times that this could be determined. He thought the vaginal route for reaching this part of the ureter was preferable in women in many cases. Operation was not always required for stones lodged in this locality. He had had four cases in which, through a cystoscope, the stone could be seen in the ureter and all of them had passed naturally. One should be very careful in the interpretation of radiographs of this region as shadows were often due to calcified glands, etc.: to make sure, a catheter containing a metal stylet should be in the ureter when the radiograph was taken. Absorbable ligatures only should be used and in fact it was often unnecessary to suture the incised ureter.

F. C. Herrick, in conclusion, said that he did not think the vaginal route in women could be safe as the danger of infection was so great.

He had referred to those cases only in which a stone was impacted in the ureter, not those in which the stone was simply passing through.

The following officers were elected for the coming year: Chairman, R. K. Updegraff; Vice-Chairman, F. C. Herrick; Secretary, C. W. Stone; Councillor, C. H. Lenhart.

Book Reviews.

Dyspepsia: its Varieties and Treatment. By W. Soltau Fenwick, M. D. (London), Doctor of Medicine of the University of Strassburg. Octavo of 485 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1910. Cloth, $3.00 net.

That "dyspepsia" may be due to derangement of about every organ of the body is a well recognized fact. That it presents characteristics marked enough to allow of a differentiation running into 400 odd pages and 10 chapters would be hard to believe, before reading this monograph on the varieties of indigestion. The author goes into the symptomatology with microscopic detail, detail which leads to repetition and re-repetition as the book advances. The discussion of gastric hyperacidity and hypersecretion in the second chapter is, however, excellent. The author points out the fact, so often lost sight of by the gastric enthusiast (*i. e.,* specialist), that "chronic hypersecretion is not a disease, but merely an expression of an organic lesion of some part of the digestive tract or of those organs which pour their secretions into it." The frequency of ulcer of stomach or duodenum, gall stones, appendicitis, and carcinoma as exciting factors in hypersecretion is emphatically shown.

The symptomatology is so fully treated as to be often bewildering. There is nothing new said on the diagnosis or therapeusis of the different forms of dyspepsia. As is usual with English authors, the book is written in a pleasing literary style. Had the subject matter presented been condensed into 200 pages, instead of covering 485 pages, as it does, the book would have been much more effective. The impression left by it, is that of printed pages, rather than of facts useful in the diagnosis, prognosis, and treatment of "dyspepsia." R. D.

The Practical Medical Series. Comprising ten volumes on the year's progress in Medicine and Surgery. Vol. III. Pediatrics and Orthopedic Surgery. Edited by Isaac O. Abt, M. D., and John Ridlon, A. M., M. D. Series 1910. The Year Book Publishers, Chicago, Ill.

The Practical Medical Series present so admirably in general, the medical literature of the world in abstract, that one regrets to find the section on pediatrics less useful than some of the others of the series. The helpful editorial comments in the volumes on internal medicine and the well balanced choice of subjects add greatly to the book. In this volume there is nothing of this sort and the articles reviewed seem less judiciously chosen. However, much of the recent literature is presented and one is glad to see, for example, emphasis laid on such important subjects as the Infectiousness of Coryza in the New-born and in Nurslings. In the section on orthopedic surgery one finds careful editorial comments added to very concentrated and well selected material.

J. M. L.

The Essentials of Histology, Descriptive and Practical. For the Use of Students. By Edward A. Schäfer, F. R. S., Professor of Physiology in the University of Edinburgh. New (8th) edition, thoroughly revised. Octavo, 571 pages, with 645 illustrations. Cloth, $3.50 net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

The first edition of this well known book appeared in 1885. It is probable that in the 25 years that have elapsed it has been used by more medical students than have any other two books on this subject, and at present it probably is in use by more students than is any other single text on this subject in the English language. This continued use attests its excellence. In comparison to the seventh edition (January, 1907) this one is somewhat more extensive. Several pages of text and many figures have been added. In each subdivision of the subject there are directions for the dependable methods of preparation of material and an appendix gives a systematic description of standard methods of technic.

The striking feature of the book is the large number (645) and uniform excellence of the figures. In no other text with which the reviewer is familiar is the proportional excellence of the illustrations so great. The drawings are clear but yet avoid the too diagrammatic trend which would make them unnatural. They are well selected from many authors. Many are printed in colors, simulating tissues stained by ordinary methods, which gives them added force. If one may criticise adversely, it would be on the paucity of the text. True, the preface says that it aims at the essentials only, but the beginner needs considerable verbal explanation. Such lack makes this text less available for the extensive courses in university medical schools.

The book is well balanced and has—what so many books lack—a proportionally adequate treatment of the nervous system and sense organs. The publishers have done their work in an admirable way. Paper, typography, impressions of illustrations and binding are all that can be asked. For courses with limited time this book will continue to be a favorite. For the practitioner who wishes a treatise on essentials it is adequate. F. C. W.

The Practical Medicine Series. Comprising ten volumes on the year's progress in Medicine and Surgery. Volume V. Obstetrics. Edited by Joseph B. De Lee, A. M., M. D., Professor of Obstetrics, Northwestern University Medical School, with the collaboration of Herbert M. Stowe, M. D. Series 1910. The Year Book Publishers, Chicago, Ill.

Among the many subjects of interest taken up, the following have been selected as being especially important: Recent work on the toxic action of the villi in early pregnancy casts some new and suggestive light on the early toxemias. There are also some interesting theories on the function of the corpus luteum. Under the consideration of eclampsia, the value of sweating is questioned, as by Bumm it is held that the toxins may be of a colloid nature, and hence not readily excreted, but rather concentrated by sweating. Decapsulation of the kidney has been of value in some cases.

In placenta praevia, the greater use of the metreurynter is advocated. By Veit, Cesarean section is not held, in general, to give better results than the other methods. The editor expresses his astonishment at such a statement.

In postpartum hemorrhage, the Momburg belt construction has been received, on the whole, very favorably; it is undoubtedly a procedure of great value and should be employed more generally. Under the head of anesthetics, chloroform is strongly condemned as a very dangerous drug to administer to pregnant women, while scopolamin-morphin narcosis finds less favor. Epidural injections involve more risk than is justifiable, and are uncertain in action.

In operative obstetrics, pubiotomy is presented with encouraging reports, despite the note by the editor that the operation seems to him "gruesome." Extraperitoneal Cesarean section does not maintain the position recently claimed for it, as it appears that it is contraindicated in the presence of sepsis, one of its hitherto most apparent advantages is hence removed. Some experimental work on the strength of the uterine scar of classical Cesarean section shows that after adequate suture, and barring sepsis, a firmly united scar is stronger than uterine muscle.

Much is said on the advantages of early rising in the puerperium, even as early as the third to the fifth day, a decrease of morbidity being claimed. The reviewer is not convinced as to this statement, at any rate when the higher classes of women are concerned. The value of early and continued bed exercises is admitted. G. B. F.

The Principles of Pathology. Volume I, General Pathology. By J. George Adami, M. A., M. D., LL. D., F. R. S., Professor of Pathology in McGill University, Montreal. New (2nd) edition, thoroughly revised. Octavo, 1027 pages, with 329 engravings and 18 plates. Cloth, $6.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

The rapid exhaustion of the first edition is in itself a very favorable commentary on the value of this book. It has also given the author opportunity to make material revisions in the text, without increasing the size of the book to any marked extent. The appendices have been incorporated in the text, and the text itself brought up to date as far as is possible in the present-day rapid advance along certain lines. The most notable changes have been made in the discussion of cell functions and activities, and in the amplification of the subject of immunity. Where the former edition showed obscurities, the author has endeavored to make the points more clearly, with some success. While not thoroughly adapted for use as a class textbook on account of its size, and to its compendiousness, it is of great value as a book of reference, on account of the variety of information it contains, and the unusually readable style. The publisher's work is identical with the former edition, and needs no further comment. R. G. P.

The New Psychology. Its Basic Principles and Practical Formulas. By A. A. Lindsay, M. D. Eugene and Arthur Lindsay, Publishers, Portland Oregon. 1908.

It is a decided waste of time to look over the 99 pages of this book. It is so worthless that it does not even merit a review unless such review is made merely to call attention to a freak publication. It is the best example, showing ignorance, superstition, and charlatanry combined that has come under the reviewer's notice.

The book is prefaced with a picture of the author. There are 17 so-called chapters, among which appear such chapter headings as: Psycho (Suggestive) Therapeutics; Hypnosis—How to Produce and Use; Cell Communication and Co-operation—Cell Insanity; Telepathy; Absent Treatment; The Chemistry and Psychology of Love. Among conditions mentioned which the author cures by suggestion are eczema, bronchitis and asthma, St. Vitus dance with inflammatory rheumatism, uterine congestion. A chapter on Intelligence of the Cells gives the following remarkable information: "That every cell is an intelligent individual of itself is of very recent revelation, and yet is capable of practical demonstration. We can take the cells from any tissue of the human body, and placing them upon the microscopic slide, bring the smallest amount of nitroglycerin in proximity with the cells, and they make rapid flight and get as far away from the drug as possible. They seem to recognize the poison as a deadly enemy that they resist with all their force. . . . . We will use capsicum as we did the other drug, when we find that the little individuals we have spoken of as cells, weave themselves up, even coming in touch with that stimulant. They embrace the capsicum with a friendly enthusiasm in marked contrast to the emotion with which they fled from the other classified stimulant, nitroglycerin. It took mind in the cells to distinguish between the two stimulants, to determine which was the foe and which was the friend. Our great intellects have not shown as much intelligence as has been demonstrated by the smallest portion of a man's body." In another chapter on Some Psychic Phenomena, the author says: "Now, in taking up the question of psychic phenomena, let no one do me the injustice to say that I would approve of all the methods of fortune telling, or that I am endorsing any man or woman, or his or her method." Then after a couple of pages devoted to "the meaning of the cards" (fortune telling by cards) he concludes from his "card experiments" that "those lifeless cards become as a written epistle containing history and prophecy" since, "it is easy to regard the cards as simply the medium of communication between the subconscious, which knows all, and the conscious mind which is bringing up that knowledge." And in another place he states that "it is inherent in the soul (subconscious mind) to know its experiences in advance, at least many months."

That any sane individual should hope to dupe intelligent people with such nonsense would appear almost beyond belief. The book is poorly written. In many places the author has shown a surprising disregard for accepted standards of grammatical construction, and in consequence the sense (or nonsense) is not clear and the reading becomes laborious. Nothing about the book would warrant it a place in either a physician's or a layman's library.

The Physician's Pocket Account Book and Practical Advice for Professional Success. By J. J. Taylor, M. D. Published by The Medical Council, Philadelphia, Pa.

A special feature of this book is that there is only one entry for all transactions and this in such a form that no posting is ever required. Any patient's account may be ascertained without delay and statements can be sent out at the end of each month without any special labor or worry. The book also has some practical directions for billing and collecting, some good business and legal hints and some valuable forms for emergency use, as well as miscellaneous tables of information usually found in these year books. R. H. B.

The Practitioners' Visiting List for 1911. An invaluable pocket-sized book containing memoranda and data important for every physician, and ruled blanks for recording every detail of practise. The Weekly, Monthly and 30-Patient Perpetual contain 32 pages of data and 160 pages of classified blanks. The 60-Patient Perpetual consists of 256 pages of blanks alone. Each in one wallet-shaped book, bound in flexible leather, with flap and pocket, pencil with rubber, and calendar for two years. Price by mail, postpaid, to any address, $1.25. Thumb-letter index, 25 cents extra. Descriptive circular showing the several styles sent on request. Lea & Febiger, Publishers, Philadelphia and New York.

The above caption well describes this useful visiting list. The various tables and miscellaneous information, such as may be required in emergencies, have been well selected and add greatly to its value.

The Medical Record Visiting List or Physician's Diary for 1911. William Wood & Co., New York.

This well known visiting list has been revised so as to increase its usefulness by eliminating some details and by the addition of some new matter; also by giving doses both in apothecaries and decimal systems. It is very complete in every respect.

Acknowledgments

The Practical Medical Series. Volume VIII, Materia Medica and Therapeutics, Preventive Medicine, Climatology. Edited by George F. Butler, Ph. G., M. D., Henry B. Favill, A. B., M. D. and Norman Bridge, A. M., M. D. Series 1910. The Year Book Publishers, Chicago, Ill.

Diagnosis and Treatment of Diseases of Women. By Harry Sturgeon Crossen, M. D., Professor of Clinical Gynecology, Washington University; Gynecologist to Washington University Hospital and Director of the Gynecological Clinic, etc. Second edition, revised and enlarged, with 744 engravings. C. V. Mosby Co., St. Louis, Mo. 1910.

State Board Examination Questions and Answers of Forty-one States and Two Canadian Provinces. A Practical Work, giving Authentic Questions and Authoritative Answers that Will Prove Helpful in Passing State Board Examinations. Reprinted from the Medical Record. Third edition, revised and greatly enlarged. Wm. Wood & Co., New York.

Manual of Clinical Pathology for the General Medical Practitioner. By Richard Weiss, M. A., Ph. D., F. C. S., in Collaboration with George Herschell, M. D., London, and Andrew Charles, F. R. C. S., London. Price $2.00 net. J. & A. Churchill, London.

Food and Feeding in Health and Disease. A Manual of Practical Dietetics. By Chalmers Watson, M. D., F.R.C.P.E., Assistant Physician, Royal Infirmary, Edinburgh, Editor of the "Encyclopaedia Medica." Oliver and Boyd, Edinburgh and London.

The Prevention of Sexual Diseases. By Victor C. Vecki, M. D., Ex-President San Francisco German Medical Society, etc. With introduction by William J. Robinson, M. D. The Critic and Guide Co., New York.

Modern Treatment. The Management of Disease with Medicinal and Non-Medicinal Remedies. In Contributions by American and Foreign Authorities. Edited by Hobart Amory Hare, M. D., assisted by H. R. M. Landis, M. D. In two volumes. Volume 1, illustrated. Lea & Febiger, Philadelphia and New York.

The Third Annual Report of the Commissioner of Health of the Commonwealth of Pennsylvania. 1908.

Internal Secretions from a Physiological and Therapeutical Standpoint. By Isaac Ott, A. M., M. D., Professor of Physiology in the Medico-Chirurgical College of Philadelphia, etc. E. D. Vogel, Easton, Pa. 1910.

Proceedings of the National Confederation of State Medical Examining and Licensing Boards. Twentieth Annual Convention, St. Louis, Mo., June 6, 1910.

The Fortieth Annual Report of the Central State Hospital, Petersburg, Va., 1910.

Department of Commerce and Labor, Bureau of the Census. Bulletin 108. Mortality Statistics: 1909.

Publications of the Massachusetts General Hospital. Volume III, No. 1. The Histogenesis of the Blood Platelets, James Homer Wright.

Northwestern University Bulletin. Medical School Announcement 1910-1911.

Public Health and Marine-Hospital Service of the United States. Hygenic Laboratory.—Bulletins Nos. 62, 63, 65, 69, 70. Public Health Bulletin No. 39. Reprint from Public Health Reports.—Nos. 49, 50, 51, 52 and 53. Public Health Reports Vol. 25, Nos. 41 and 42.

Reprints by: F. Park Lewis, Buffalo, N. Y. Robert W. Lovett, Boston, and Herbert C. Emerson, Springfield, Mass. F. Park Lewis, Buffalo, N. Y. J. A. Rivière, France. Laertus Conor, Detroit, Mich. L. Vernon Briggs, Boston, Mass.

Medical News.

W. C. Stoner has removed his office to the Kingmoore Bldg., 1110 Euclid Ave.

W. T. Corlett gave an extremely interesting clinic at Lakeside Hospital, Monday, November 14, at which were exhibited the cases of syphilis which he had treated with Ehrlich's "606," furnished by the Rockefeller Institute for Medical Research. There was a very large attendance of both local and out of town physicians.

The Cleveland Medical Library Association's annual meeting will be held at the Library, Monday evening, December 12, 1910. At this meeting S. Wolfenstein, J. H. Lowman, C. B. Parker and Newton Baker will take part in the memorial exercises for deceased members. Announcement will also be made of the generous bequest of the late Marcus Rossenwasser. The following proposed amendment to the Constitution will be voted upon at this meeting:

It is proposed to amend Article X, Section 3, of the Constitution which now reads "If the dues of a member are not paid within the month in which they become due, the Treasurer shall notify said member of his delinquency. If the dues remain unpaid one month after such notification, the name of the delinquent shall be reported by the Treasurer to the Council for such action as it may deem expedient," to read as follows, "If the dues of a member are not paid on or before April 1 of the year in which they become due, the Treasurer shall notify said member of his delinquency and post his name suitably in the reading room. If the dues remain unpaid till June 1, after such notification and posting, such failure to pay the dues establishes suspension, which penalty may be remitted by the Council on satisfactory payment."

It is proposed to insert Section 4 in Article X to read as follows: "Article X, Section 3, may be suspended by vote of the Council in cases of protracted illness or absence of one or more years from the city."

The Ophthalmological and Oto-Laryngological Section and the Experimental Medicine Section of the Academy of Medicine of Cleveland will hold a joint meeting on December 23, 1910, at which a demonstration of apparatus and methods of color mixing, etc., will be given by Dr Hyde and his co-workers from the Physical Laboratory of the National Electric Lamp Association.

The Council of the Cleveland Medical Library Association took the following action on the death of the late Judge Tayler:

"The City of Cleveland today mourns the passing of a distinguished citizen. His broad and intelligent sympathies touched and aided the activities of this community in innumerable ways.

"The Council of the Medical Library Association, of which Judge Tayler was a member, today in session, desires to put in its records a tribute of admiration for the great jurist, of affection for the man and of sorrow for the loss of an honored fellow member."

The Lakeside Hospital Medical Society held its fiftieth meeting Wednesday, November 30. The program was as follows: 1. Presentation of Three Cases of Cerebrospinal Lues, H. O. Ruh. 2. Presentation of a Case of Fractured Pelvis, A. H. Coleman. 3. Presentation of Three Cases of Cerebrospinal Lues, W. S. Wyatt. 4. Presentation of a Case of Liver Tumor, A. W. Wyckoff. 5. Sarcoma of the Sternum with von Recklinghausen's Disease, H. K. Shawan. 6. Presentation of Specimens of Tubal Pregnancy, T. Smith, Jr. 7. Demonstration of Pathological Specimens, E. P. Edwards.

A well attended meeting on behalf of the Isabel Hampton Robb Memorial was held at the Chamber of Commerce on Saturday, Nov. 26. Prof. Wm. H. Welch of Johns Hopkins University, C. B. Parker, J. H. Lowman and others addressed the meeting.

Harry Graefe, Sandusky, having completed a medical and hospital course at Bellevue Medical College and Hospital, has taken up the practise of medicine with his uncle, Wm. Graefe, one of the oldest practitioners of Sandusky.

H. B. Frederick, Sandusky, a recent graduate from the Eclectic College in Cincinnati, has opened an office with R. B. Hubbard, the oldest practitioner of that school in the city.

The Good Samaritan Hospital, Sandusky, has been left between $60,000 and $75,000 by the will of the late Mrs. Bauback. The money can be used only for improvements or additions to the building. The hospital is in an excellent condition, having cleared all expenses since it was opened last Spring.

The Health Officer of Sandusky, from the first of this year up to the present date, has received reports of eight cases of diphtheria, four of which died, a mortality of 50%. Antidiphtheritic serum was used in all of these cases. Our Sandusky correspondent, H. D. Peterson, writes as follows: "What does it mean? I can see only two poor excuses; the antitoxin was not used soon enough; or it was not used in sufficient quantity. Too often we hear it stated that antitoxin was used in this or that case but the case died anyway. I always endeavor to learn how soon and how much antitoxin was used in these fatal cases, and I have learned that 3,000 or 6,000, or possibly 10,000, units were used and then only after the disease has progressed for some time or as a last resort; thus antitoxin is unjustly criticized as not being a specific in diphtheria. Antidiphtheritic serum should be used immediately in all suspicious cases without waiting for the result of the laboratory report. The initial dose should be at least 3,000 units and if the case has been sick very long 10,000 or 20,000 units should be used and repeated every six or eight hours if there is no improvement: 50,000 may be given at a single dose in very severe cases.. There have been many cases with recovery reported in which 50,000 or 75,000 and even 100,000 units have been used. There was one case reported in the *Journal A. M. A.* about one year ago in which 700,000 units were used and the case recovered. I used 43,000 units in one case which was considered hopeless and the case recovered. The most gratifying thing about these cases in which heroic doses were used was that no postdiphtheritic paralysis occurred, proving conclusively that the serum does not produce it as some still believe. It is the diphtheritic toxins which produce these paralyses and they were noted before antitoxin was ever dreamed of. These toxins must be neutrilized by the serum regardless of the dose and the sooner physicians realize this fact the sooner the mortality will drop to practically nil. The expense should no longer be a bar to the free use of the serum as the State will supply it to indigent cases.

"John H. McCollom, Assistant Professor of Contagious Diseases in Harvard, in his article on diphtheria in Osler's Modern Medicine says: 'No patient ill with diphtheria in the acute stage should be considered in a hopeless condition, but antitoxin should be given in large doses until he commences to improve or succumbs to the disease. When one sees a patient with membrane covering the tonsils and uvula, a profuse sanious discharge from the nose, spots of ecchymosis on the body and extremities, cold clammy hands and feet, a feeble pulse and nauseous odor of diphtheria, and finds that after the administration of 20,000 units of antitoxin in two doses the condition of the patient improves slightly and after 10,000 units more, there is a marked abatement in the severity of the symptoms, that when an additional 10,000 units have been given the patient is apparently out of danger and eventually recovers, one must believe in serum therapy in diphtheria. When one sees a patient in whom the intubation tube has been repeatedly clogged and the hopeless condition changes for the better after the administration of 50,000 units, one cannot but be convinced of the importance of giving large doses in the very severe and apparently hopeless cases.'"

At the November meeting of the Sandusky County Medical Society, Chas. J. Wehr of Bellevue read a paper upon the Diagnostic and Therapeutic Use of Tuberculin. A number of temperature charts of patients so treated were shown. Discussion showed that the members, while favoring its use in diagnosis, were not enthusiastic over its therapeutic advantages.

D. W. Shumaker, Canal Dover, J. C. Floyd, Steubenville and J. McClain, Coshocton, attended the Clinical Meeting at Chicago during the two weeks, from November 5 to 19, and were enthusiastic over the success of the meeting.

Paul M. Patterson, whose practise is limited to diseases of the ear, nose and throat, has opened an office at 237 Michigan St., Toledo.

P. I. Mulholand, Toledo, has moved his office to the Wayne Building.

Flower Hospital, Toledo, has plans perfected for a large addition to be constructed in the Spring.

Meetings of the Academy of Medicine of Toledo and Lucas County:

The Surgical Section met Friday, October 28, 1910. The program was as follows: 1. Diagnosis of the Chronic Surgical Lesions in the Upper Abdomen, C. N. Smith; discussion opened by Willard J. Stone. 2. What Should be the Attitude of the Profession toward the Non-Medical Cults, Chas. W. Moots; discussion opened by W. H. Snyder.

The Board of Education of Toledo has appointed the following medical school inspectors: Ralph Stewart, Gratian Whitwham, C. G. Souder and C. D. Selby.

The General Meeting of the Academy was held Friday, November 4, 1910. The program consisted of an address upon Acute Anterior Poliomyelitis by Henry O. Feiss of Cleveland (to appear in full in this Journal).

The Pathological Section met Friday, November 11. The program consisted of Pathological Demonstrations and Case Reports by Drs W. W. Alderdyce, R. P. Daniels, S. D. Foster, C. F. Tenney and C. G. Souder.

The Medical Section met Friday, November 18. The program was as follows: 1. A Caution Regarding Heroin and Codein, Waldo M. Bowman; discussion opened by Charles W. Moots. 2. Report of a Case of Urticaria Pigmentosa, Jeremiah Metzger; discussion opened by Edwin D. Tucker. 3. Report of Cases of Cretinism and Mongolian Idiocy, B. B. Brim; discussion opened by H. E. Smead.

W. B. Saunders Company now have going through their presses a three volume work on Practical Treatment, written by international authorities and edited by those able clinicians, John H. Musser and A. O. J. Kelly, both of the University of Pennsylvania. In looking over the prospectus and the list of contributors one is assured that the work will be of the greatest value and importance.

The Stark County Medical Society met at Canton, Tuesday, November 15. The program was as follows: 1. Diagnosis of Diseases of the Abdominal Viscera, H. M. Schuffell. 2. Cases of Prostatic Hypertrophy, D. S. Gardner. 3. The Prevention of Unnecessary Blindness, E. P. Morrow.

Chas. G. Brown, Mansfield, has purchased a new residence and office on Park Ave. West and expects to move in December 1.

W. E. Loughridge, Mansfield, is spending the month hunting in Michigan.

Y. H. Nichols, Mansfield, is attending the clinics in Chicago.

M. G. Atkinson, Mansfield, has returned from Canada and resumed practise.

O. O. Blakeslee, Conneaut, has retired from practise and moved with his family to Florida.

The Muskingum County Medical Society met at Zanesville Wednesday, November 9. The following program was presented: 1. The Relation and Law of Sex, R. B. Bainter. 2. Race Suicide, E. C. Logsdon. The Society voted to send congratulations to C. E. Watkins of Etna, who was elected to the State Senate at the last election.

R. B. Bainter, Zanesville, spent two weeks attending the clinics at the Chicago hospitals during October.

C. U. Hanna, Zanesville, returned November 12 from a ten days' visit to the hospitals of New York.

J. G. F. Holston, Zanesville, returned November 14, from a three months' trip through Europe. He attended clinics in many of the hospitals in Germany.

J. R. McDowell, Zanesville, spent ten days at Lakeside Hospital, Cleveland, the first of November, attending the various clinics and the dispensary.

James Morrison Bodine, as Dean and President of the Faculty, has presided over the destinies of the University of Louisville Medical Department, for 45 years. Now entering his eightieth year he continues to devote his energies to the cause of medical education. His many friends and pupils scattered throughout the country have deemed this an appropriate occasion to show their appreciation of his devotion and their affection for him personally. To this end it has been decided to give him a testimonial dinner on December 16, 1910, at the Seelbach Hotel in Louisville. Those friends whom the committee has been unable to reach by invitation are cordially invited to attend and are requested to signify such intention at once by writing to the chairman of the committee, I. N. Bloom. The cost per plate will be $10.00.

A Swindler Abroad: Physicians are warned against a man traveling from place to place presenting a card with the name "R. F. Hall" printed in the center. In the lower left hand corner are the words "Parke, Davis & Co." and in the lower right hand corner the words "Detroit, Mich." This man is described as follows: "5 ft. 6 or 8 inches, 150 lbs., fiend for Turkish cigarettes, about 27 years, complexion medium, wears nose glasses and continually takes them off and on; he dresses well, is a good talker, fine appearance, wears one of those light colored slip on or off rain coats." This individual has no connection with Parke, Davis & Co., and so far as heard uses the card to facilitate the passing of bogus checks.

The American Society of Medical Sociology: Recognizing the intimate relationship between disease and the social-economic system under which we live, recognizing that many diseases are caused directly by our social and economic conditions, recognizing that the efficiency or inefficiency of our treatment often depends upon the economic condition of the patient, recognizing that there are many problems deeply and vitally affecting the welfare of mankind which are left practically untouched by any existing medical society, The American Society of Medical Sociology has been organized for the purpose of studying radically all questions of a sociomedical nature, and invites your cooperation.

The results of investigations being carried on at present by the members will be disseminated by means of meetings, lectures, reports, pamphlets, etc. Anyone who is or wishes to become an earnest student of sociomedical questions and desires to join the Society, will please notify The American Society of Medical Sociology, 12 Mt. Morris Park W., New York.

Deaths.

George S. Stein, Columbus, Ohio, died November 19, aged 68.

Abraham V. Conklin, Delaware, Ohio, died October 28, aged 77.

David N. Kinsman, Columbus, Ohio, died November 24, aged 76.

John D. Axline, Shawnee, Ohio, died November 19, aged 68.

William H. Williams, Cleveland, Ohio, died November 17, aged 40.

George R. Millhouse, formerly of Allentown and Elida, Ohio, died October 22, aged 70.

John T. Carter, Cleveland, died November 19, aged 48.

William L. Rouse, Painterville, Ohio, died October 18, aged 60.

James R. Bell, Dayton, Ohio, died September 24, aged 85.

William H. Rothert, Cincinnati, Ohio, died November 4, aged 46.

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